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JANUARY 2025 issue

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Negative vista of grain trade

A notable feature of the past twelve months was the favourable influences boosting commodity import demand in a number of countries. But the resulting growth in world seaborne dry bulk trade may not be sustainable through 2025, based on recent indications, although as usual perceptions of the outlook vary.

Prospects for a distinct improvement in global economic activity— which could have an impact on imports of dry bulks — is not yet foreseeable. Forecasts suggest that the world increase in gross domestic product in 2025 may not be much higher than last year's restrained performance. Although the USA has been buoyant, China, Japan and Europe are experiencing resistance in raising economic growth rates to levels indicating more dynamic activity.

GRAIN & SOYA

After a strong upsurge in grain trade during 2023/24, the outlook for the current 2024/25 year ending third quarter 2025 is looking negative. Expectations for imports into Asia have been lowered, largely reflecting a huge reduction in imports into China, the biggest regional buyer, amid abundant supplies available.

World trade in wheat plus corn and other coarse grains could fall from 464.8MT (million tonnes) in 2023/24 (almost 10% higher than seen in the previous year) to 430.5mt in 2024/25. This US Department of Agriculture estimate published last month shows a

reduction of over 34mt or 7%, more than half of which is attributable to a reduced forecast for China.

The Middle East is also expected to see lower imports, along with some weakness elsewhere. Positive influences affecting trade are not prominent, as shown in table 1.

COAL

Although last year's further expansion of global coal trade again exceeded many expectations, there are doubts about whether the upwards trend can be sustained through 2025. Downwards pressures from the spread of electricity generation based on renewable energy sources, and government's policies designed to achieve lower carbon emissions are at the forefront.

Revised calculations published last month by the Australian Government Department of Industry provide a cautious forecast. World coal trade (including land movements but mostly seaborne) could be flat in 2025 at 1,414mt, after an estimated 1,416mt total in the previous twelve months. But contrasting changes are predicted for steam coal, down by 2% to 1,060mt, and coking coal, up by 6% to 354mt. China's imports are expected to be 12% lower at 436mt.

IRON ORE

While positive changes in import volumes among leading buyers enabled global iron ore trade to grow during 2024, the biggest influence was China's continued upwards trend. Estimated

extra purchases by South Korea, Vietnam and others contributed a relatively small proportion of the overall increase.

Despite a restrained economy in the past two years amid difficulties in the residential property sector, limiting steel production, China's iron ore imports have evolved strongly. Rising exports of steel products and, especially, iron ore stockbuilding, assisted this trend. But some forecasters suggest that last year's increase in China's iron ore imports (4% growth to 1,124mt in the first 11 months) is unlikely to persist.

MINOR BULKS

One of the prominent minor bulk elements, fertilizers, apparently saw higher global seaborne trade in 2024. Total potash, phosphate (rock and processed), sulphur and urea movements are estimated at over 200mt and several signs indicate that some components may see continued growth in the twelve months ahead.

BULK CARRIER FLEET

Among bulk carrier size groups, the world fleet of Handysize vessels (10–39,999 deadweight tonnes) saw accelerated growth in 2024 at over 4%. This enlargement raised the fleet to 125m dwt, as shown in table 2 (comprised of 4,500 ships), reflecting higher newbuilding deliveries. The growth rate may be prolonged during 2025 because newbuilding deliveries are scheduled to be at a similar level, while scrapping remains low.

TABLE 1: MAJOR GRAIN IMPORTING AREAS (MILLION TONNES)

	Wheat and coarse grains, crop years ending June (wheat), September (coarse grains)					
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25*
East Asia	69.1	106.0	96.5	89.7	107.2	88.7
Southeast Asia	47.5	46.3	45.3	43.2	52.9	51.3
European Union	24.2	21.2	26.2	37.8	34.3	32.6
Middle East	65.2	59.7	68.5	64.6	59.7	51.5
North Africa	51.5	49.5	47.1	45.8	52.5	52.8
Sub-Saharan Africa	30.9	30.3	30.8	28.0	33.1	34.0

source: US Department of Agriculture *December 2024 forecast

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

	2019	2020	2021	2022	2023*	2024*
Newbuilding deliveries	3.1	2.9	3.8	4.2	4.4	5.8
Scrapping (sales)	0.7	1.0	0.6	0.3	0.5	0.7
Losses	0.0	0.0	0.0	0.1	0.0	0.0
Plus/minus adjustments	0.0	0.1	0.1	0.0	-0.1	0.0
World fleet at end of year	107.2	109.3	112.7	116.6	120.4	125.5
% change from previous year-end	+2.2	+1.8	+3.1	+3.4	+3.3	+4.2

source: Clarksons Research (historical data) & Bulk Shipping Analysis December 2024 forecast *forecast

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



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Material Handlers

BHP operational review reveals particular success in copper, iron ore and steelmaking coal

OPERATIONAL REVIEW FOR THE HALF YEAR ENDED 31 DECEMBER 2024

STRONG UNDERLYING OPERATIONAL PERFORMANCE, WITH COPPER PRODUCTION UP 10%

Says Mike Henry, BHP Chief Executive Officer, "BHP delivered safe and reliable performance in the first half. Our flagship copper, iron ore and steelmaking coal assets delivered particularly strong production in the period. Copper volumes [at 987kt] rose 10%, with Escondida achieving a ten-year production record, more than offsetting the impact of a weather-related power outage at Copper SA. WAIO shipped record half-year tonnes through the port, enabled by supply chain improvements following the completion of major debottlenecking at the port. Steelmaking coal tonnes [8.9 million tonnes] from the BMA operations were up 14%.

We made further progress on our growth pathways in future facing commodities. In January, we completed the formation of Vicuña Corp., with Lundin Mining to advance the Filo del Sol and Josemaria projects in Argentina, which we consider to be one of the most significant global copper discoveries in decades. In Canada, our Jansen Stage 1 potash project is now 63% complete, with first production scheduled for late 2026, and we continue to execute Stage 2 in parallel.

In Brazil, Samarco, BHP Brasil and Vale signed a comprehensive settlement agreement with the Brazilian government and public authorities for the Samarco Fundão dam failure, reflecting BHP Brasil's commitment to support the people, communities and environment affected by the tragedy.

Our WA Nickel operations were safely transitioned into a period of temporary suspension, with many employees moving into roles to support this phase or within other parts of BHP.

We are well positioned to continue



strong momentum into the second half with a number of assets now expected to deliver production in the upper half of their respective ranges, while maintaining tight cost control. BHP is in good shape and we have a clear pathway for growth," he concludes.

OPERATIONAL EXCELLENCE: STRONG PERFORMANCE, ESCONDIDA UP 22%

Group copper production increased 10%, driven by a 22% increase at Escondida.

Strong underlying performance at all other assets, including at WAIO, where recent completion of the Port Debottlenecking Project (PDP1) has unlocked greater throughput, and at BMA where production increased 14% (excluding production from the now divested Blackwater and Daunia mines).

GROWTH: CLEAR PATHWAYS FOR COPPER GROWTH

In January 2025, BHP completed the formation of Vicuña Corp., a 50/50 joint venture with Lundin Mining to develop the Filo del Sol and Josemaria copper projects. BHP's total cash completion payment was US\$2bn.

In November 2024, BHP outlined its attractive organic copper growth pipeline

at its Chilean copper site tour, with low capital intensity options in both concentrator and leaching pathways.

GUIDANCE: EXECUTING TO PLAN

BHP is on track to deliver production in the upper half of the FY25 guidance range at WAIO, BMA and NSWEC, as is Samarco.

FY25 production guidance at all assets remains unchanged, with the exception of Copper SA, which has been lowered due to the impacts from the weather-related power outage. BHP maintains sector-leading cost discipline and remains on track to deliver FY25 unit cost guidance across all assets.

SOCIAL VALUE: DECARBONIZING ASSETS AND VALUE CHAIN

At its 2024 AGM, BHP received a 92% vote in favour of its second Climate Transition Action Plan (CTAP). The company is taking action to decarbonize its operated assets and to support decarbonization in its value chain, including the opening of the Port Hedland solar and battery project to provide renewable power to WAIO's port facility and announcing the site preferred for development of Australia's largest ironmaking electric smelting furnace (ESF) pilot plant.



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Dry bulk trade's sturdy momentum



Coal operations using a chute from Weba Chute.

Richard Scott, Bulk Shipping Analysis

An uptrend in world seaborne dry bulk trade continued in the past twelve months, boosted by a strong expansion of China's imports. The global performance was much more positive than envisaged at the outset in early 2024. But, similarly to perceptions a year ago, a further large increase in 2025 is not looking likely at present.

Based on available data and estimates for the final weeks of last year, dry bulk trade volume in 2024 may have expanded by about 170mt (million tonnes). A breakdown by importing countries suggests that a large proportion of this growth, perhaps as much

as three-quarters of the total, was comprised of additional commodity purchases by China. Other countries' imports together saw only relatively slow enlargement, reflecting subdued economic activity and effects on commodity-using industries in countries importing raw materials and other dry bulks.

Currently, indications point to limited potential for dry bulk commodity importers to raise overall purchases during 2025. While differing circumstances are apparent in individual commodity trades, a common theme is limited prospects for

progress in industrial activity and signs of negative influences affecting agricultural bulk movements, and a possible downturn in parts of China's import demand.

EARLY ESTIMATES

Estimates for world seaborne dry bulk trade in the past year of 2024 may be revised substantially when more figures for the final months become available. As shown by table 1 below, commodity movements appear to have increased by around 3% last year, following an increase of 3.6% in 2023. Among the main elements

TABLE 1: WORLD SEABORNE DRY BULK COMMODITY TRADE (MILLION TONNES)

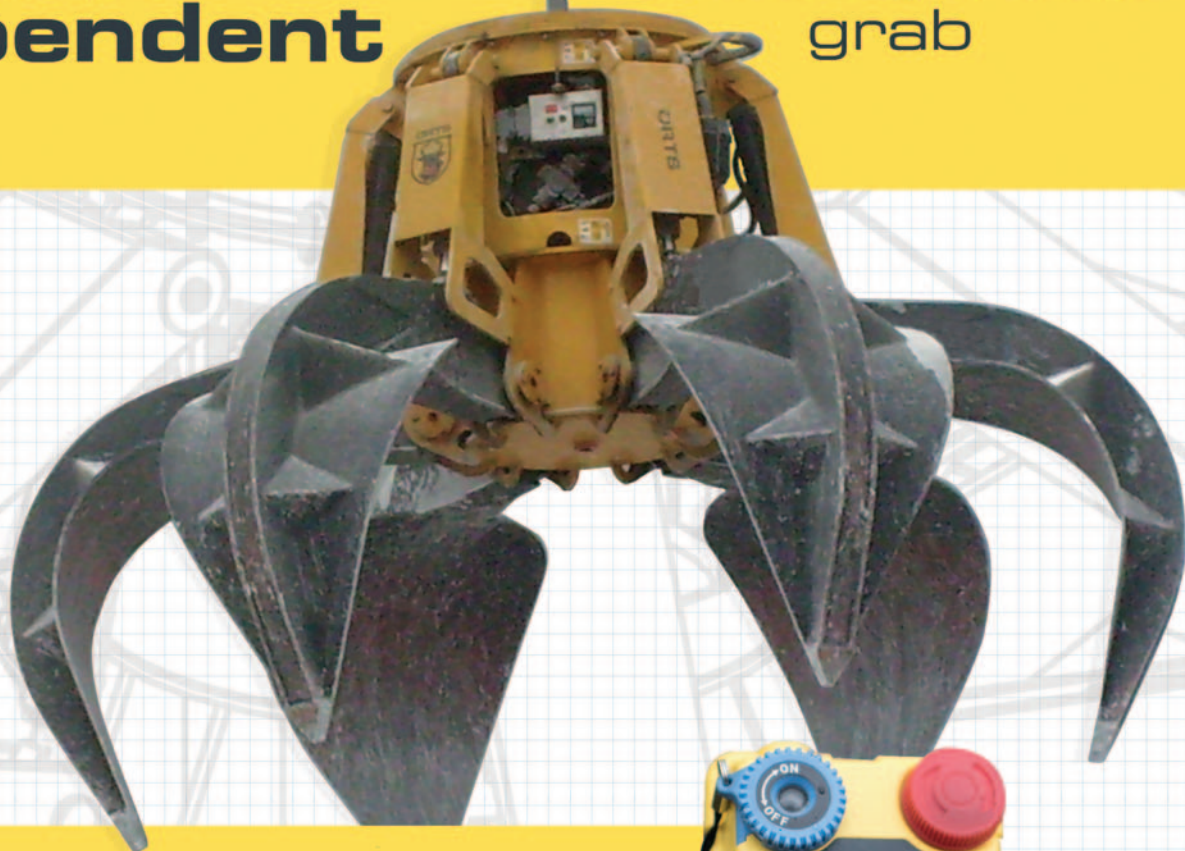
	2020	2021	2022	2023	2024*	2025*
Iron ore	1,508	1,524	1,478	1,542	1,590	1,580
Coal	1,181	1,226	1,227	1,316	1,350	1,310
Grain (including soyabbeans)	522	530	512	523	535	530
Other dry bulk commodities	2,110	2,222	2,147	2,177	2,250	2,250
Total dry bulk trade	5,321	5,502	5,364	5,558	5,725	5,670
% growth from previous year	-1.1	3.4	-2.5	3.6	3.0	-1.0

source: Clarksons Research (2020-2023 data) and Bulk Shipping Analysis 2024-2025 forecasts, December 2024

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TABLE 2: GDP GROWTH IN KEY ECONOMIES (% CHANGE FROM PREVIOUS YEAR)

	2020	2021	2022	2023	2024*	2025*
USA	-2.2	6.1	2.5	2.9	2.8	2.4
Eurozone	-6.1	6.2	3.3	0.5	0.8	1.3
Japan	-4.2	2.7	1.2	1.7	-0.3	1.5
India#	-5.8	9.7	7.0	8.2	6.8	6.9
China	2.2	8.4	3.0	5.2	4.9	4.7

source: OECD Economic Outlook, 4 December 2024 #India's fiscal years starting April * forecast

performances varied somewhat in the past twelve months, although all displayed positive changes.

The outlook for 2025 is based on assumptions that could prove defective, a common feature of many forecasts, because world events — whether economic, weather-related or geopolitical — affecting industrial, agricultural or energy trade volumes are often almost impossible to predict. Recent signs tend to suggest that there are limited prospects for growth in global dry bulk trade this year. One possible negative element identifiable is that some of the growth in China's imports seems vulnerable to being partly reversed over the next twelve months.

ECONOMIC ACTIVITY

Changing patterns of economic activity in

many countries directly affect dry bulk import volumes, as emphasized by variations over the past few years. When large changes in the pace of consumer, business or government spending unfold, consequences are clearly visible in production levels in industries using dry bulk commodities mainly or partly obtained from foreign suppliers.

Last year the pace of global economic activity was maintained broadly unchanged compared with the previous year according to provisional calculations. The latest (December) assessment by the OECD organization emphasized how the trend in the past few years has shown “remarkable resilience despite being subject to major shocks such as the pandemic and an energy crisis”. Growth in world gross domestic product (an overall measure of goods and

services output) is estimated to have remained flat in 2024 at 3.2%.

A positive sign for 2025 is that inflationary pressures have receded and seem to be largely under control, allowing the reduction in policy interest rates to be sustained over the twelve months ahead. Nevertheless the usual uncertainties about economic growth prospects prevail, amid disruptive geopolitical influences that potentially could remain problematical.

Forecasts published by the OECD several weeks ago, shown in table 2 above, reflect a cautious view of unfolding events. World GDP growth this year could be similar to that seen in the past twelve months, at 3.3%. But a mixed picture of changes among the most influential countries is envisaged. The USA and China may see slightly slower growth rates, while



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the Eurozone and Japan could experience activity picking up.

OECD analysts commented that “the global economy is projected to remain resilient despite significant challenges” and “inflation in the OECD area is expected to ease further”. Lower inflation boosts real household income growth and spending. In turn this improvement eventually strengthens industrial activity, potentially proving a positive influence on elements of dry bulk commodity trade. Of perhaps greater direct significance though is the challenge in China to revitalize economic growth.

STEEL PRODUCTION

Trends in the steel industry affect a large proportion of global dry bulk commodity trade movements. Consumer, business and government spending patterns influence demand for steel in many economies. Changes in steel output volumes that result, in countries where steel is produced, cause variations in consumption and imports of iron ore, coking coal and some other raw materials.

Reduced steel production volumes were seen during 2024 in a number of major raw materials importing countries. According to World Steel Association data, in the first ten months of last year volumes compared

with those seen in the same period a year earlier were down by 5% in South Korea, 4% in Japan and 3% in China. By contrast in the European Union a 2% increase was achieved, while in India (a leading coking coal importer) production rose strongly by almost 6%.

Global steel industry seaborne raw materials trades — especially iron ore — are dominated by China’s massive import demand. In the past twelve months although steel production in China weakened, related import demand for iron ore grew rapidly. Steel usage was restrained by faltering economic progress, partly reflecting the effects of problems in the residential property sector. However, higher exports of steel products supported steel output.

Steel production prospects this year remain mostly somewhat muted. The latest short-range steel demand outlook published by the World Steel Association suggests a possible outcome. Based on this view, potential is visible for steel demand in some of the main producing and raw materials importing countries to strengthen in 2025. Japan, the European Union plus United Kingdom, and India could see rises of 1.7%, 3.5% and 8.5% respectively. Conversely, China and South Korea could experience reductions of

around 1%. Actual steel production volume changes are not forecast by the WSA in this analysis.

IRON ORE AND COKING COAL TRADE

Movements of the principal steel industry raw materials, iron ore and coking coal, comprise about one-third of all global seaborne dry bulk commodity trade. In 2024 iron ore trade appears to have increased by 3%, compared with the preceding year, to around 1,590mt as shown in table I. Coking coal trade (not shown separately) evidently saw a faster increase to 280mt.

Three-quarters of world seaborne iron ore trade volume is contributed by China’s imports, dominating the segment. These imports (including some overland movements) totalled 1,180mt in 2023. During the past twelve months the volume received apparently increased by about 4%. Within the category of other importing countries comprising the remaining one quarter of the global total — including the European Union, Japan and South Korea — signs suggest that little or no overall growth occurred last year.

In the coking coal segment, world seaborne trade is smaller than the iron ore volume, while imports are more evenly distributed among a range of countries. In

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2024 the global total is estimated to have risen by around 7%, reaching over 280mt. Higher imports into China contributed a large part of the upturn, accompanied by a mixed performance among other main importers. India and South Korea apparently saw increases, while in Japan and the European Union declines were seen.

Prospects for global steel industry raw materials trade during the year ahead suggest that potential for expansion is limited, and the outcome may be flat or lower. Some countries may experience continued restraints on steel production growth.

Raw materials imports growth in the European Union, Japan and South Korea may be seen and India's coking coal imports could rise amid the strong steel output trend forecast to continue. But China's raw materials imports seem more likely to decrease.

TRADE IN STEAM COAL

Around four-fifths of global seaborne coal trade consists of steam coal, also known as thermal coal. Consumption and import demand is mostly related to usage by power stations in a wide range of countries, and steam coal is also used in cement manufacturing plants and other industrial processes.

Provisional calculations for 2024 as a whole indicate that world seaborne steam coal trade may have increased by 2% compared with the previous year, to reach about 1,080mt, after 7% growth in the previous twelve months. Last year's outcome was achieved as a result of China's import expansion. Elsewhere, including in the EU, Japan, Korea and



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Taiwan purchases apparently were flat or lower, although additional volumes into India and Vietnam were seen.

During the past year global energy supplies were mostly adequate, returning to a more normal pattern of influences. Extensive disruption, caused by Europe losing pipeline gas supplies from Russia after the invasion of Ukraine in early 2022, further receded. The focus last year shifted back towards the worldwide trend of transitioning to cleaner energy sources.

Government policies aimed at cutting coal usage, especially in power stations, to reduce carbon emissions were re-asserted. Despite this influence, coal's contribution to energy supplies and security remained vital for many countries.

In China last year's continued expansion of coal imports reflected sustained reliance on this energy source for electricity generation, amid only a marginal increase in domestic coal production. Stockbuilding of coal supplies also is estimated to have been

instrumental in raising foreign purchases. But there are doubts about whether the upwards trend will prevail through 2025, when a reduction currently seems more predictable. Together with downwards pressure on imports in several other countries, lower world seaborne steam coal trade in the year ahead is foreseen.

GRAIN & SOYA TRADE

Large quantities of wheat, corn and other coarse grains such as barley, plus



soybeans, are usually included within the definition of global seaborne trade in grain and soya. Related trade in soyameal (and other oilseeds and meals) is usually included in the minor bulk commodity trade segment. Based on tentative calculations, modest growth in seaborne grain and soybeans trade occurred last year, as shown in table 1, raising the volume by 2% to about 530mt.

Trade statistics for this commodity group typically are compiled on a 'split year' basis, known as a 'crop year', 'marketing year' or 'trade year', reflecting the sequence of world harvests and timing of new export seasons. One prominent feature is the impact of weather variations, often unpredicted, affecting crops harvested by export suppliers as well as domestic crops in importing countries. This aspect is a notable driver of trade and import demand changes from year to year.

As viewed on the usual marketing year basis, world trade in wheat and coarse grains in the past 2023/24 year ending third quarter 2024 was higher than in the preceding period, by about 10%, at 465mt (including land movements). US Department of Agriculture figures show that imports by countries in Asia, North Africa, sub-Saharan Africa and elsewhere were larger than in the preceding twelve months, contrasting with lower imports into Europe and the Middle East.

During the current 2024/25 trade year a downturn in global grain trade is expected. USDA analysts estimate a 7% decline to 430mt, resulting from lower imports into a number of countries around the world, especially in Asia, where China's purchases are predicted to decline steeply.

Within the soybeans and soyameal segment, figures compiled by USDA show that global trade was about 7% higher in the 2023/24 trade year ending September 2024, at 247mt.

The largest buyer is China, forming almost half of the world's total imports. Purchases by Chinese buyers, mostly consisting of beans, were higher in the past twelve months. Beans and meal imports by other buyers also increased.

Continued growth in world



soybeans and meal trade in the current 2024/25 year may be seen. But it is likely to be small, according to USDA estimates

suggesting a 1% increase to 250mt. Imports of beans by Chinese crushing (processing) mills are forecast to decline by 3% to

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109mt, amid weakening demand following stockbuilding in the past twelve months.

TRADE IN MINOR BULKS

Many cargo varieties are included within the extensive minor bulks category of seaborne dry bulk trade. Commodities of widely differing types contribute, some of which provide large volumes while others are relatively small. The entire segment is huge, and estimates suggest that it comprises around two-fifths of all world seaborne trade in the dry bulk sector.

Cargoes associated with manufacturing industries and construction activity comprise the biggest part of the minor bulks group. These are described as 'industrial' bulks. The remainder is agricultural or related cargoes. Based on calculations by Clarksons Research, global seaborne minor bulk trade increased by 1% in 2023 to reach 2,177mt.

Last year an accelerated advance may have resulted in the total rising by about 3%. Prospects for 2025 point to another sizeable increase.

The largest among individual components in this segment are steel products and forest products, both including many different varieties. Other prominent elements in the 'industrial' sub-group are bauxite and alumina, steel scrap, cement, coke and petroleum coke, salt, and nickel and other ores. Agricultural or

related bulk cargoes consist of sugar, oilseed meals, rice, plus raw or semi-processed fertilizers.

Numerous elements of the minor bulks segment strengthened during 2024 based on provisional data. Growth apparently occurred in steel products (coil, plate, sheet and other items) and forest products trade. Also bauxite and alumina movements saw positive influences as China's import demand for bauxite continued to expand. By contrast, global cement trade was affected by adverse influences in the construction industry and apparently continued a declining trend seen in the past few years.

OUTLOOK: THE YEAR AHEAD

When attempting to prepare a plausible dry bulk trade forecast for a period of twelve months ahead there are usually some seemingly reliable indications, accompanied by other signs that are highly speculative. The outlook for global economic activity and its likely effects on commodity using activities is a basis for assessing changes in import volumes, although its effects are often modified by more specific influences in individual countries.

Foreseeable trends in the global economy during 2025 provide only limited signs of an improving trend that could benefit commodity import demand,

although support could be maintained. Attention is firmly focused on China's economy in particular, because of its huge contribution to world imports of dry bulk commodities and growth of seaborne trade in recent years. Most forecasts suggest that economic activity in China is unlikely to accelerate.

Uncertainty surrounds prospects for imports of iron ore and coal into China in the year ahead. Together volumes of these two raw materials totalled an estimated 1,600mt last year, equivalent to about 30% of the entire world dry bulk commodity trade. If this volume is not maintained, and is significantly reduced, which seems a strong possibility, an upwards trend in global dry bulk trade will be harder to achieve.

A potential restraint on future dry bulk trade growth, perhaps becoming clearer in 2025, is likely to become a wider and more visible influence. Downwards pressure on world coal trade looks set to persist over an extended period of years, reflecting international agreement to reduce or eliminate use of this fuel. Moreover iron ore trade may have ceased or almost ceased growing, and reached a plateau from where an eventual decline may occur. Nevertheless in other categories — grain and soya movements, and some minor bulk elements — longer term prospects are brighter.



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Marine fuel problems persist five years on from IMO 2020 Sulphur Cap rules

As the fifth anniversary of the IMO 2020 Sulphur Cap approaches, fuel compatibility and viscosity problems continue to result in marine engine component damage and high cat fines.

"We expected fuel incompatibility problems and high levels of cat fines to diminish with the introduction of the IMO 2020 Sulphur Cap [MARPOL Annex VI] in January 2020. But despite new fuels and advanced engine technologies, problems persist. Cat fines remain a major problem for marine engine operators," said Matthias Winkler, Managing Director of CM Technologies (CMT).

Catalytic fines are the byproduct of catalysts used in the fuel refining process. It is the accumulation of these very hard, abrasive aluminium and silicon particles that can severely damage cylinder liners, fuel injection valves, piston crowns and rings, potentially damaging the engine beyond repair.

Winkler said cat fines levels are exceeding ISO8217:2017 specifications in fuel being bunkered in some areas, including the ARA region. But more common is that accumulated cat fines in tank sediments are being dispersed back into the tank and engine during operations, particularly in rough seas.

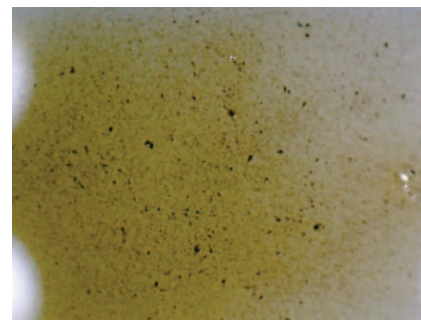
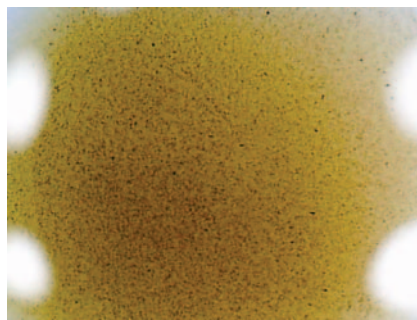
With higher viscosity IFO 380cst or IFO 180cst fuels, cat fines tend to be suspended in the denser liquid and are removed more easily by fuel separators. Low sulphur fuels have an average viscosity of 105cst, though it can be as low as 10cst. And this is resulting in cat fines sinking to the settling tank, where they can often remain undetected.

"Engine builders recommend no more than 10ppm of cat fines in the fuel before it enters the engine, in reality, it is about 30ppm but sediment levels are much higher," Winkler said.

While some ship operators are opting for additives that can improve Total Sediment Potential (TSP), sediment tests have shown samples significantly exceeding the maximum cat fines limit of 0.10%.

Historically, more frequent use of fuel separators was the best way of removing cat fines from HFO before the fuel enters the engine, but with LSF "cat fines content before the fuel oil separators and consequently before entering the engine is usually unknown," said Winkler.

CMT also found that, since January



Cat fines in fuel samples following treatment in a purifier/separator (left) and from the fuel pump (right). Images taken using a digital microscope in parts per million.

2020, more paraffinic blends are being used but there is incompatibility between an aromatic and a paraffinic fuel, which can lead to fuel degradation and instability.

David Fuhlbrügge, CMT's Operations Manager, furthered: "Mixing two types of fuels increases the risk of incompatibility, particularly when mixing heavy fuel and low sulphur distillate fuels. This can result in clogged fuel filters, separators and fuel injection pumps, all of which can lead to loss of power or even shut down of the propulsion plant, putting the ship at risk.

CMT is also seeing increasing levels of asphaltene, another consequence of fuel blending, and which also results in increased sediment formation. And although the rate of sediment formation is

not easily predicted (it changes with conditions such as temperature and storage time) it is resulting in an increase in fuel system blockages.

Aside from the manual removal of sludge from tanks, which is both time-consuming and costly, CMT advocates more frequent monitoring of the fuel for compatibility. "Our Electronic Compatibility Tester can save operators from the costly consequences of having an incompatible fuel mix in the tank," said Fuhlbrügge.

Measuring the actual accumulated concentration of cat fines meanwhile has until now been largely impossible.

In a significant development for LSF users, CMT has introduced a test kit that allows crews to quickly and easily determine the cat fines content of fuel during and after bunkering, and before injection. The CMT Cat Fines II Test Kit not only helps protect the engine and its component parts against excessive wear, but it also helps verify the efficiency of the fuel treatment plant — separators, fuel filters and settling tanks.

Winkler said: "Engines running on low sulphur fuels are at an elevated risk of damage, but we can now measure cat fines and verify the quality, grade and compatibility of the fuel delivered, detecting potential fuel and engine problems before they happen."

ABOUT CMT

Founded in 2003, CM Technologies GmbH and is one of the world's leading providers of testing and monitoring technology. CMT is a recognized expert in machine health monitoring, fuel and lubricant analysis and water testing. The company's world renowned PREMETS range of Diesel Performance Monitoring technology can be traced back to engine pioneer James Watt.



CMT's new Cat Fines Test Kit.

Thordon's water-lubricated shaft bearings selected for bulk carrier retrofit

Thordon Bearings has delivered COMPAC water-lubricated propeller shaft and SXL rudder bearings to replace oil- and grease-lubricated bearings onboard McKeil Marine's bulk carrier *Northern Venture* as part of a major refurbishment project.

Established in 1956, Canada-based McKeil Marine provides marine transportation along the St. Lawrence Seaway, the East Coast, and Canadian Arctic with its diversified fleet of tugs, barges, workboats and vessels, including bunkers, cement carriers, and tankers.

The shipowner acquired the 155m (508.5ft), 19,651dwt *Northern Venture* in 2022. The self-discharging River-Class vessel has a forward-mounted discharge boom and a single point loading system which allows all four holds to be loaded via shuttle conveyors from a single deck-mounted hopper.

"The conversion to water-lubricated propeller shaft and grease-free rudder bearings was made to ensure the vessel does not discharge oil or grease into the Great Lakes," said Andy Vary, Director of Technical Operations at McKeil Marine. "It's part of our continuous commitment to our people, our customers and the communities in which we operate."

The retrofit included COMPAC bearings for the vessel's 409mm (16.1in) diameter propeller shaft along Thordon's Water Quality Package to ensure a clean water supply to the bearings. Thordon grease-free SXL rudder bearings were also supplied for the bulker. This installation was undertaken in summer 2023 at COSCO's Nantong Shipyard in China, with the vessel

operational on the Great Lakes in December 2023.

McKeil Marine is a returning customer for Thordon Bearings. The world's first Thordon water-lubricated propeller shaft bearing was installed on a Great Lakes tug owned by McKeil Marine in the late 1970s.

Following this conversion, many other Great Lakes operating vessels converted to Thordon, helping to raise the profile of the Burlington, Ontario-headquartered company across the global shipping industry.

Thordon's COMPAC propeller shaft bearing is constructed from a cross-linked polymer alloy that offers a low breakaway friction resulting in quiet and smooth operation. The material's abrasive resistance is much greater than traditional laminated materials. The visco-elastic nature of the material also improves the hydrodynamic performance of the bearing leading to longer wear life, and as the material is homogenous, it provides consistent low wear and friction properties.

To promote early formation of a hydrodynamic film between the propeller shaft and bearing, the lower (loaded) portion of the bearing is smooth, while the upper half of the bearing incorporates grooves to allow water lubricant/coolant to flow. A key benefit of the water-lubricated propeller shaft system is that it negates the need for a damage-prone aft seal.

José Duarte, Marine Business Development Manager – North America, Thordon Bearings, said: "As an added environmental benefit, Thordon's COMPAC

system has been shown to lead to fuel savings and reduced emissions. Compared to oil-lubricated bearings, at rated shaft speeds viscous friction is lower with water."

The Thordon Water Quality Package is designed to supply sea or lake water to the propeller shaft bearings for lubrication and cooling and to condition the water by removing suspended solids.

Thordon's SXL rudder bearings operate without grease above and below the waterline, offer high abrasion resistance and can also withstand high shock loads, improving the wear life of the bearing.

Thordon has been actively supporting shipowners such as McKeil Marine, Algoma Central, American Steamship, CSL, Lower Lakes Towing and Interlake Steamship for over three decades. More than 120 vessels sailing the Great Lakes have Thordon's water-lubricated components.

ABOUT THORDON BEARINGS

Thordon Bearings designs and manufactures a complete range of journal bearing and seal systems for application across a number of sectors, including marine, offshore, clean power generation, mining and other pump and land-based industrial sectors. Thordon Bearings' polymer bearing solutions offer excellent wear life, reduced noise and low operating friction while providing a dependable, long-lasting, environmentally friendly alternative to grease and oil-lubricated bearings. Thordon systems and bearings are available worldwide through over 70 agents and distributors.



McKeil Marine's Northern Venture fitted with Thordon COMPAC water-lubricated propeller shaft bearings and SXL rudder bearings.

INTERCARGO Quality Panel expansion enhances sector collaboration to drive maritime excellence

On 13 January, the International Association of Dry Cargo Shipowners (INTERCARGO) announced a strategic development in meeting the needs of its ever-growing global membership.

Following a productive INTERCARGO Quality Panel meeting with RightShip on 25 November 2024, both organizations have made significant progress in addressing member-raised concerns and developing solutions for the bulk carrier sector, while reinforcing their shared commitment to advancing operational standards in the bulk carrier sector. This collaborative approach is essential for developing effective and pragmatic solutions that enhance safety, transparency and efficiency across the maritime sector.

The next planned meeting is already confirmed for Q1 2025, underlining the long-term nature of this collaboration.

In response to the Quality Panel's

increasing scope of work, INTERCARGO will implement a new structure for it starting January 2025. The Panel will operate through two regional divisions to better accommodate members across different time zones. The Western division will be led by Metaxia Psalti of Neda Maritime as Chair, with Tasos Karlis of Virono serving as Vice-Chair. The Eastern division will be headed by Debashis Sen of Swire Bulk as Chair, supported by Capt. Uttam Kumar Jaiswal of Pacific Basin as Vice-Chair.

"This strategic restructuring and our enhanced dialogue with RightShip demonstrate INTERCARGO's commitment to proactively addressing our members' needs," said Capt. Uttam Kumar Jaiswal, Vice-Chairman of INTERCARGO. "By strengthening these sector partnerships and expanding our global reach, we're better positioned to tackle

critical challenges in vetting inspections, ship-port interfaces, and regulatory compliance.

In parallel, INTERCARGO reaffirms its confidence in established institutional organizations within the industry such as international regulatory bodies and classification societies, recognizing their fundamental role in ensuring the long-term equitable governance and advancement of global maritime standards. Through enhanced dialogue and strategic initiatives, INTERCARGO aims to address the evolving challenges faced by the bulk carrier sector while maintaining a focus on quality, safety and environmental stewardship."

Concluding, Captain Jaiswal stated "The organization continues to welcome new members, encouraging shipowners, operators, and managers to participate and contribute to the organization's meetings, discussions, working panels and groups."

OSM Thome launches EVIGO: shaping the future of sustainable maritime solutions

As the maritime industry faces increasing pressure to meet ambitious environmental targets, OSM Thome is launching EVIGO, a green services division that aims to redefine sustainability in shipping.

"With EVIGO, we're not just responding to the demands of decarbonization — we're shaping the future of maritime sustainability," said Finn Amund Norbye, CEO of OSM Thome. "This new division reflects our dedication to innovation and our determination to empower customers with transformative solutions that will define the next era of shipping."

Unveiled on 22nd January during OSM Thome's customer event in Athens, EVIGO is positioned to help clients navigate complex environmental regulations, adopt innovative sustainable solutions, and drive the industry toward a greener future while staying competitive.

"EVIGO represents more than just a new service offering — it's a cornerstone of our vision for a sustainable maritime industry," said Tommy Olofsen, Chief

Marine Services Officer of OSM Thome. "With this initiative, we are reaffirming our commitment to environmental leadership, supporting our clients in adapting to regulatory demands while also championing solutions that propel the industry forward."

At the heart of EVIGO's vision is strong leadership, and OSM Thome has appointed Pia Meling as Managing Director, effective March 2025. Meling is an internationally recognized leader in sustainable shipping and maritime decarbonization, with an impressive track record of delivering transformative results. Her expertise in lifecycle decarbonization and green ship recycling, combined with her operational shipping experience and strategic insight, will guide EVIGO in achieving its ambitious goals.

"I am thrilled to lead the EVIGO team as we tackle some of the most pressing challenges in our industry," said Meling. "By leveraging the global competence of OSM Thome, advanced technologies, digital innovation, and strong partnerships, we will deliver

impactful solutions that drive real progress toward a greener, more resilient maritime sector. The combination of data-driven insights and physical service offerings at scale will ensure tangible and measurable results for our customers."

EVIGO offers comprehensive, end-to-end solutions designed to help customers achieve compliance with evolving environmental regulations while advancing their sustainability goals and staying competitive. Building on the green services division's achievements since its inception in February 2024, EVIGO is poised to drive progress through cutting-edge technologies, actionable advice, and a rational but futureproof approach to green innovation.

EVIGO is a clear statement of OSM Thome's commitment to sustainability. Through strong leadership, innovative solutions, and a customer-centric approach, the new division promises to help the maritime industry set an effective course toward a greener future — anchored in resilience and responsibility.

Oscillations in the bulk carrier freight market



Richard Scott, Bulk Shipping Analysis

Extra support for the bulk carrier freight market emerged over the past twelve months, providing a more solid foundation for the market rates trend through most of 2024. Stronger global dry bulk commodity trade and demand for bulk carriers was a feature, while the world fleet of these vessels continued enlarging. Currently, tentative signs point to this pattern proving difficult to sustain through 2025.

Freight market progress last year was influenced by an improvement in the

underlying balance between vessel demand and supply. The standard indicator of demand for bulk carriers, tonne-miles, reflected increased trade volumes. It was also boosted by longer average voyage distances, amid changes in trade patterns partly caused by geopolitical events. Meanwhile an expanding bulk carrier fleet ensured additional transport capacity, slightly modified by changes affecting vessel productivity.

Over the twelve months ahead,

variations among these influences almost certainly will be seen, but some are not easy to foresee because signs are unclear or subject to differing interpretations. Observing prospects for the two fundamental influences, a possible outcome for 2025 is a slowing rate of dry bulk commodity trade expansion, together with a slightly slower rate of bulk carrier fleet growth as shown in the table below. This evolution is unlikely to strengthen the freight market. Alternative scenarios are

TABLE 1: WORLD BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2020	2021	2022	2023	2024*	2025*
Newbuilding deliveries	49.2	38.6	31.7	35.3	35.0	37.0
Scrapping	15.3	5.2	4.3	5.4	3.8	8.0
Losses	0.5	0.1	0.1	0.0	0.3	0.0
Other adjustments/conversions	0.0	-0.1	-0.1	0.0	0.0	0.0
Net change in fleet	33.4	33.2	27.2	29.9	30.9	29.0
Fleet at end of year	913.8	947.0	974.2	1,004.1	1,035.0	1,064.0
% growth from previous year	3.8	3.6	2.9	3.1	3.1	2.8

source: Clarksons Research (historical data) & BSA 2024-2025 forecasts

*forecast

identifiable, although all possibilities have speculative elements.

FLEET GROWTH STABILITY

Focusing on the supply side of the global bulk carrier freight market, during the past year world fleet growth was similar to the annual growth rate seen in preceding years. The fleet's deadweight tonnage, an approximate measure of cargo carrying capacity, grew by an estimated 3% in 2024. Compared with the previous year, a similar deadweight tonnes volume of new ships joining the fleet was recorded, while the tonnage of old or uneconomic ships leaving the fleet decreased. The net deadweight capacity added was somewhat higher than in the previous twelve months, as the table shows.

At the end of 2023 the world fleet of bulk carriers (including all ships with capacity of 10,000 deadweight tonnes and over) consisted of 13,632 vessels totalling 1,004 million dwt, according to data compiled by Clarksons Research. One year later at the end of 2024 this fleet was about 31m dwt larger at 1,035m dwt, based on early estimates that are subject to revision.

Newbuilding deliveries in 2024, new capacity being added, apparently remained stable compared with the preceding year at 35m dwt, a total which may be revised upwards when more complete information is available. By contrast scrapping (recycling), measured by reported sales for demolition, diminished to under 4m dwt, maintaining a trend of exceptionally low volumes seen in the past few years.

Among the main vessel size groups (Capesize, Panamax, Handymax and Handysize) fleet growth rates last year varied in a range of 2% and 4%. Enlargement in the Capesize segment, comprising ships of 100,000dwt and over, forming two-fifths of the entire world bulk carrier fleet, was the slowest at under 2%.

Within the Panamax 70–99,999dwt size group, including Kamsarmax 80–89,999dwt bulk carriers, growth was over 3%.

Expansion rates were higher elsewhere. The Handymax 40–69,999dwt segment (including Ultramax ships exceeding 60,000 dwt as well as Supramax bulkers of 50–59,999dwt) grew by over 4%. In the Handysize segment of smaller 10–39,999dwt bulk carriers, growth also exceeded 4%.

Actual changes in transport capacity are not always illustrated accurately by deadweight fleet figures, however. Calculating the real capacity available is often more complex. Changes in world fleet capacity to move cargoes also depend on how productively ships are employed. Influencing this productivity aspect are ships' voyage speeds, ballast (empty) voyage patterns, and duration of port visits, comprehensive data for which is not always accessible. Using deadweight tonnage as a measure has the advantage of being simple and available promptly. It is therefore a useful broad indicator.

Average voyage speed in the fleet is an important determinant of transport capacity. Even a relatively small change in the bulk carrier fleet's average speed, resulting in the time taken to complete a voyage increasing or decreasing, affects annual transport capacity available. In recent years a declining speed trend has been evident, resulting in reduced average numbers of voyages completed annually and therefore lower productivity. The past two years emphasized the declining trend, partly offsetting the impact of growing deadweight capacity.

SEA TRADE GROWTH

Dry bulk trade maintained expansion in 2024 at a similar rate to that seen in the previous year, based on provisional calculations. This performance was

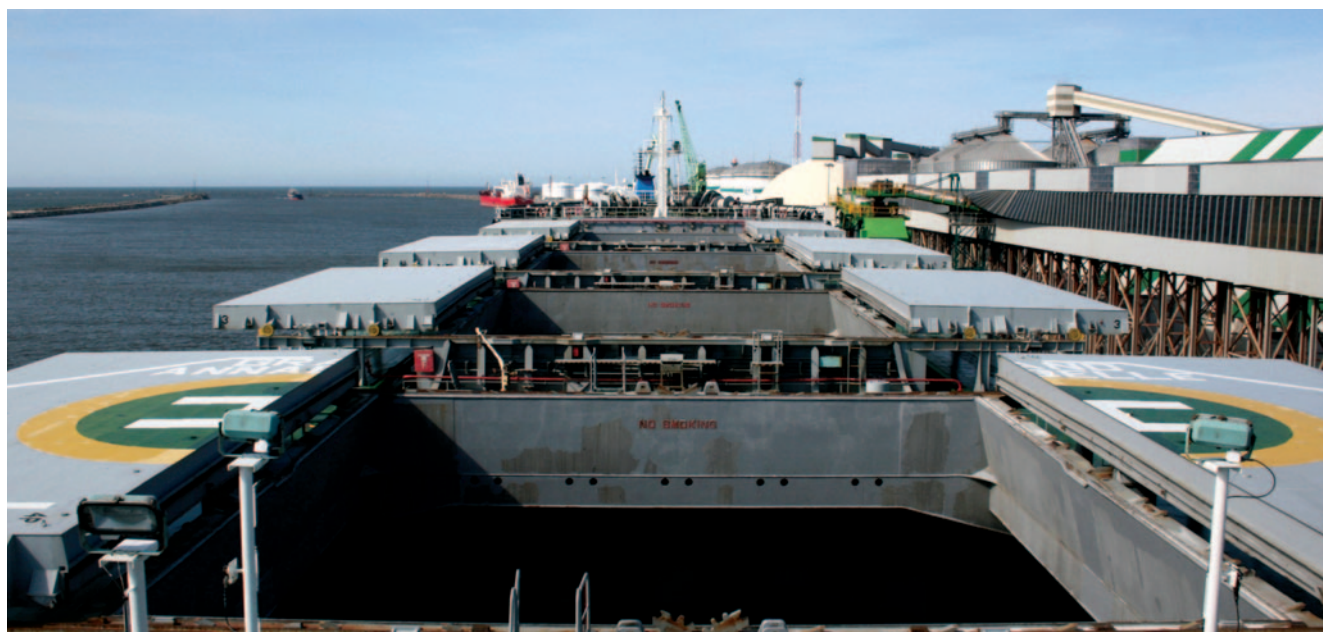
stronger than envisaged at the outset. A detailed trade overview is contained in another article in this edition of *DCI* ('Dry bulk trade's sturdy momentum, on p6'). The following comments are a brief overview.

Global seaborne dry bulk trade increased by over 3% in 2024, following growth of about 3.5% in the previous twelve months. A fairly even distribution of growth occurred among the main commodity components. Iron ore, coal and grain/soya trade volumes appear to have grown by around 3%, while in the minor bulks category enlargement was quicker but probably under 4%.

According to Clarksons Research and Bulk Shipping Analysis, overall 2024 dry bulk trade rose by about 170mt (million tonnes) from the previous year, reaching 5.7 billion tonnes.

China's higher dry bulk imports were a feature of last year's world growth. Despite restrained economic activity, the volume of dry bulk imports into China is estimated to have risen by perhaps as much as 6% in 2024. Additional coal and iron ore purchases contributed a large proportion of the total increase in cargoes imported. In the remainder of the world, growth in dry bulk import volumes was slower, probably at under 2% based on rough calculations.

From a shipping market perspective another aspect also determines demand for the services provided by bulk carriers, affecting how much 'employment' is created. Trade volumes transported are the usual focus, because these can be measured relatively easily and are a convenient proxy for vessel demand. But voyage distances are influential. Distances affect the number of cargo-carrying trips performed annually by a ship. Any significant change in the annual average voyage distance performed by each deadweight tonne of cargo-carrying





capacity has an impact on vessel demand.

A 'tonne-mile' unit includes both cargo (trade) volume and voyage distance, providing a more accurate gauge of demand for transport capacity. But statistics compiled on this basis are often not as readily available or as timely, because additional information and extensive calculations are required. In 2024, according to preliminary estimates by Clarksons Research, the annual tonne-miles percentage growth was about two percentage points above the tonnes volume percentage increase, at over 5%, enhancing the boost for bulk carrier demand.

BALANCING DEMAND AND SUPPLY

Trends in freight market rates over the past twelve months (and previously) were shaped by changes in the balance between demand for, and supply of, bulk carriers. Dry bulk commodity trade and vessel demand strengthened, accompanied by rising capacity in the world fleet of ships carrying these cargoes. A changing market balance resulted from differences in the pace of change between the two elements.

On the bulk carrier demand side of the balance, patterns evolving in recent years have been variable. After a downturn caused by the coronavirus pandemic's negative effects on economic activity in 2020, there was an upturn in the following year. This revival was partly reversed in 2022 before another recovery in 2023 that continued through last year. Increases were larger than decreases so world demand for these vessels (on a tonne-mile basis) appears to have grown by about a sixth over the past five years.

By contrast expansion of the world bulk carrier fleet was sustained through this period since 2019, although the annual growth rate slackened modestly. The fleet's deadweight capacity at the end of last year consequently was about 18% higher than five years earlier. Within this period the pace of newbuilding deliveries fell, but scrapping also diminished, resulting in a restrained fleet annual growth rate.

The trend of freight market rates was

affected by these changes. In the period ahead, during 2025, there is uncertainty — a fairly typical perception — about how various influences will evolve. Effects from the direction and trend of the market demand/supply balance will be modified by complications from many temporary developments. Recent estimates suggest that slower growth in dry bulk trade this year could be exceeded by growth in the bulk carrier fleet. But other influences are likely to alter this relationship.

One of the temporary factors that has been prominent in the past twelve months results in particular uncertainty. Diversion of trading patterns — to avoid use of the Suez Canal because of attacks on ships in the Red Sea approaches to the canal — has added to voyage distances for many bulk carriers, a boost for tonne-miles. Currently this influence looks set to continue for some time, although eventually may cease to be a positive vessel demand aspect.

FREIGHT MARKET EVOLUTION

After some initial weakness bulk carrier freight rates in the early months of last year seemed to have begun a firmer trend, compared with the previous year, which was sustained until around the middle of 2024. During the second half signs of a slackening trend became more visible and were accentuated in the final weeks of the year.

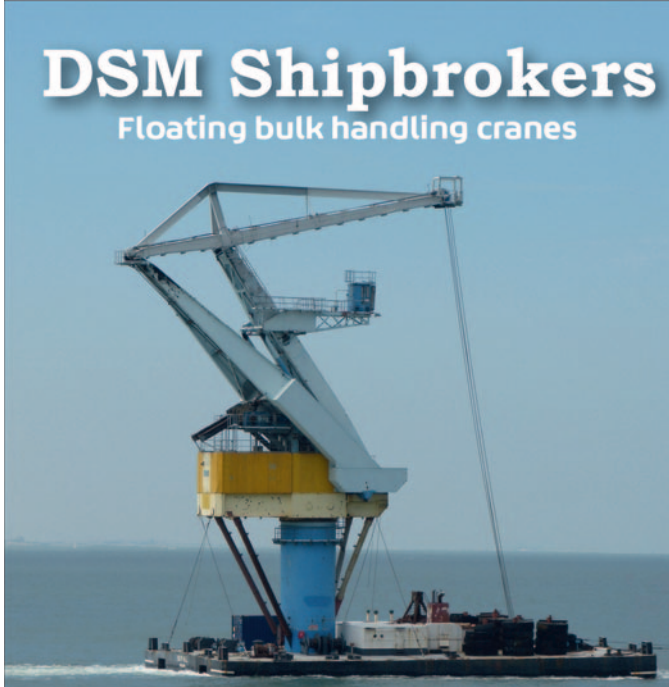
Freight rate changes were often

proportionally larger and more distorted in the Capesize segment than elsewhere, as often happens. Capesize rates are especially volatile, reflecting short-term demand fluctuations in the two commodity trades — especially iron ore, and also coal — on which these large size bulk carriers mostly depend for employment opportunities.

A representation of the evolving bulk carrier market freight rates trend is provided by the Baltic Dry Index (BDI), although this index does not fully illustrate the sector's entire performance. The index is calculated daily by the Baltic Exchange, based on a weighted basket of time charter hire rates for various bulk carrier sizes and typical employments on the specific long-distance international routes included. It is an approximate indicator of changes in the

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cost of transport for dry bulk cargoes.

Starting at around 1,500 index points at the beginning of 2024, the BDI rose to about 2,400 in March before fluctuating between 1,500 and over 2,000 in the next few months. During the third quarter the index remained within a similar band but weakening influences subsequently resulted in a deterioration in the year's final weeks that became acute by year-end with an abrupt fall towards the 1000 points level.

MARKET OUTLOOK

A positive view of prospects for the bulk carrier freight market over the twelve months ahead is modified by uncertainty about the potential for last year's firmly rising trend in cargo movements to continue. Although interpretations and opinions vary, as usual, signs currently suggest a possibility of limited or no growth in global dry bulk trade volumes and vessel demand in 2025.

Meanwhile bulk carrier fleet capacity seems likely to continue growing this year at a similar rate to that seen in the past twelve months. An increased pattern of scrapping old or uneconomic tonnage could assist in reducing fleet expansion, but that is a mostly speculative expectation.

One improving background influence that could strengthen economic activity and in turn raise import demand for commodities is evident. Receding inflation and accompanying interest-rate reductions in a number of countries could eventually improve the setting for industries importing dry bulk commodities. However this process may be quite gradual with limited benefits during 2025.

A perhaps larger uncertainty with

potential for a negative change in circumstances during this year is the outlook for China's imports. Two massive components in particular — iron ore and coal — seem vulnerable to downturns, following a period during 2024 when it has been unclear whether consumption patterns in China were providing enough support. Recent extra volumes seem to have partly reflected stockbuilding, a boost which may not continue indefinitely. But government decisions about industrial activity and import policies are not easy to predict.

Another puzzle is how the role of disruptive influences affecting bulk carrier employment will unfold in the period ahead. In the past two years, cargo movements in some trades switching to longer routes, benefiting tonne-mile employment, have been a noticeable benefit for vessel demand. But temporary influences, such as that caused by re-routing to avoid the Suez Canal, are set to be reversed at some point in the future. Other influences affecting the market demand/supply balance, especially port congestion and delays, are difficult to predict in duration and magnitude.

Market observers often express cautious optimism about limited fleet growth despite the enlarging orderbook for new ships and its implications for future newbuilding delivery schedules. The ageing fleet of bulk carriers resulting from very slow scrapping in the past few years is identified as a reason for expecting demolition sales to accelerate soon. Tightening regulations designed to reduce carbon emissions are seen as hastening this process. As a consequence fleet expansion

could be curbed and the supply/demand balance would then benefit.

Higher scrapping of old or uneconomic vessels may seem predictable. But forecasting recycling volumes more specifically is largely based on guesses. It is speculative because market sentiment among shipowners — reflecting recent, current and expected future freight market rates, and how secondhand vessel prices are evolving — is often a major influence on demolition sales decisions. Collective changes in owners' attitudes and actions are not usually predictable, except very broadly.

In a quarterly analysis of the bulk carrier market published at the end of October last year, international shipping association BIMCO suggested "a weakening of market conditions in 2025 and 2026 as supply grows faster than demand". This outlook, implying negative effects on freight rates, still seems realistic based on how the trends are evolving and current signs of future changes. If the Red Sea/Suez Canal route returns to normal during 2025, a sizeable adverse impact on vessel demand and freight rates is likely to be visible.

Other analysts are more optimistic. Expectations at the beginning of last year, suggesting that underlying support from the demand/supply balance during 2024 would not be altogether solid, proved incorrect as trade volumes and tonne-mile demand grew more robustly than foreseen. This example illustrates how prior assessments are often nullified by events. A similar pattern could unfold over the next twelve months, resulting in more support than presently envisaged for the freight rates trend.

Jeffersonville port delivers record road salt shipments to Greater Louisville area during recent winter storms

CGB, PORTS OF INDIANA DISTRIBUTES OVER 1,400 TRUCKLOADS OF SALT IN A WEEK FOR LOCAL DEICING

In the wake of the record snowfall that blanketed Greater Louisville in mid-January, Ports of Indiana-Jeffersonville and CGB Enterprises distributed more than 1,400 truckloads of road salt to supply local transportation departments and private contractors.

The volume was equivalent to 19 fully loaded barges and shattered CGB's weekly and monthly salt distribution records. CGB operates logistics and distribution terminals in the Midwest and southern United States through its subsidiary Consolidated Terminals and Logistics Company.

CGB personnel worked overtime through the weekend, filling 210 heavy-duty

dump trucks with the equivalent of three barge loads of salt over the two days for forwarding to distribution points on both sides of the Ohio River.

"The Ports of Indiana and CGB teams put in long hours to clear the port roads and keep the salt supply chain moving," said George Ott, port director at Ports of Indiana-Jeffersonville. "As a southern Indiana native, I can empathize with everyone who is not used to having a foot of snow on the ground and the challenging driving conditions we experienced. I commend CGB management and operations personnel for their dedication and hard work on behalf of the local community under some extraordinary circumstances."

Ports of Indiana-Jeffersonville generates

an annual economic impact of \$2.5 billion for the Kentuckian economy and supports more than 12,000 jobs in the region. Indiana's three state-owned ports, including Jeffersonville, Mount Vernon and Burns Harbor, are responsible for an \$8.7 billion economic impact for the state's economy.

ABOUT PORTS OF INDIANA

Ports of Indiana is a statewide port authority operating three ports on the Ohio River and Lake Michigan. Established in 1961, Ports of Indiana is a self-funded enterprise dedicated to growing Indiana's economy by developing and maintaining a world-class port system, and by serving as a statewide resource for maritime issues, international trade, and multimodal logistics.

Manta consolidates position in key dry bulk market

According to the Port of Manta, in Ecuador, Manta Port Terminal (TPM) has become a key regional facility in the discharge of bulk cargo. VP Samuel Franco puts this down to the construction of new warehouses, which has allowed local importers to switch their business from other ports to that of Manta.

Although complete figures for 2024 are not yet available, the expectation is that Manta will once again handle more than a million tonnes for the year, a figure

that has remained fairly constant since TPM took over operations in 2017. The result would have been better had consumer demand for imported finished vehicles not fallen in line with a downturn in the economy.

Vessels using the port are also now guaranteed a stable level of draught, since TPM has done what the state previously hadn't, which is to undertake maintenance dredging programmes. A second round of recent dredging has kept draught at around 13 metres.

Franco is also keen to stress that traffic will be further boosted by the signing of free trade agreements with both China and the US.

Nevertheless, Manta still needs better road and rail access to its hinterland if it is to benefit more from industries located there, argues TPM president, Roberto Salazar, who laments the fact that additional cargo exists which simply cannot economically access the port.

Barry Cross

Additional capacity added to Suez Canal

A successful trial has been completed by the Suez Canal Authority involving the simultaneous transit of two vessels in the Small Bitter Lake segment of the canal. This has been made possible by dredging work between KM122 and KM132, effectively doubling capacity in the southern zone.

The trial involved bulk carriers *Fu Xing Hai* and *Suvari* both sailing southwards, while four vessels made use of the eastern lane. This whole area has been re-equipped with buoys and navigation aids, while two new escort tugs are in place to improve navigation safety.

Upgrades to this southern zone of the canal will additionally contribute to improving navigation safety whilst at the same time mitigating the impact of water and wind currents on transiting vessels.

The New Suez Canal has now been increased from 72km to 82km thanks to the duplication of transit lanes, which will allow six to eight extra vessels to make use of the facility each day, and also leave enough spare capacity to deal with emergencies.

BC



New floating Liebherr cranes for Chibatão

In Brazil, Porto Chibatão has become the first port in the world to have four Liebherr LBS 800 type cranes operational. The order was first placed in 2022, with the units delivered to the port in September last year. They now form part of a fleet of

16 barge tilting cranes that Chibatão has in operation.

Technically, each unit features a unique 66-metre boom, giving them a much more extensive outreach. Further, their 9.6-metre tower allows enhanced visibility for

the operator. The cranes offer high productivity and low emissions.

The port is in the process of extending its floating quayside from 710 metres to 1,026 metres, at a cost of \$17 million.

BC

Itaqui celebrates largest ever fertilizer discharge

In December, the Brazilian Port of Itaqui made history, discharging its largest ever shipment of fertilizer, which took place at Berth 99. This arrived from China aboard the *Affinity Diva*, and totalled 80,000 tonnes. The port has become one of the most important fertilizer hubs in Brazil, helping to boost the worldwide increase in demand for agribulk.

For the first 11 months of the year, Itaqui had already handled 3.6 million tonnes of fertilizer, and regularly achieves productivity rates of 500tph (tonnes per hour), even though the regional average is just 300tph.

BC

Brazilian north key in expanding agri-exports

Ports in the north and north-east of Brazil between them now account for 39% of all the country's soybean and corn exports. For the first ten months of 2024, for example, this amounted to 47.7mt (million tonnes), as per figures released by the National Waterway Transport Authority (Antaq).

This market share was achieved despite low water levels throughout the region as a direct result of drought.

The standout ports have been those in the states of Amazonas and Para, which accounted for nearly 60% of all exports from that region, and 80% of total corn consignments.

The north and north-east ports currently have combined capacity of 52mt, which should reach 100mt within the next five years.

BC



*Port of Manaus,
in the state of
Amazonas.*

Four new concessions for Escombreras

Cartagena Port Authority is to issue a tender for new concessions at its Escombreras harbour. This will involve extending the existing dock, which is mainly used to handle dry and liquid bulk. Various companies have already indicated an interest in the concessions, which will add up to a further 50,000m² of surface area for clinker grinding and dry bulk storage, although some companies are keen for an area greater

than 60,000m² to be created.

As part of the Escombreras Extension Development Plan, available land in the Logistics Zone of the Escombreras extension will be put out to tender. Initially, this will be divided into plots of 45,245m², 15,769m², 6,069m² and 5,769m² respectively, giving a total of 72,852m².

Although most bids will come from the bulk sector, the port authority has

not ruled out bids from companies working in other sectors too. The eventual selection will also be based on criteria such as productivity and efficiency in operational performance; a commitment to guaranteed minimum traffic, automation and technological innovation; an increase industrial activity rate; investment volume; and a shorter concession period, among others.

BC

Bulk operations at Dutch ports & terminals

high-tech solutions boost efficiency and cost-effectiveness



OVET's floating cranes offer flexibility in lightering and unloading

OVET dry bulk terminal is a stevedore company which specializes in storing, transshipping and processing dry bulk. With over 100 employees, the company has been offering very high quality and flexibility in services, since 1957. It can achieve a total unloading capacity of as much as 80,000 tonnes dry bulk per day, using its four floating cranes.

The company's ability to provide high quality services is the result of its continuous focus on the questions and requirements of its clients. Every OVET employee knows their daily duty of

providing good service and quality; they deliver superb personal service throughout the whole ARA range. This distinguishes OVET dry bulk terminal as a top-notch provider when it comes to the treating of and the flexibility and quality in dry bulk.

FLEXIBILITY

With its four floating cranes, OVET is capable of working in the entire ARA range. The floating cranes can be moved between the terminals in the ports of Vlissingen (Flushing) and Terneuzen, in a

mere three to four hours. On top of that, lightering can take place at Terneuzen Rede and Everingen (on the Scheldt). Also, almost all equipment at the terminals is mobile. Flexibility and OVET belong together.

WIDE RANGE OF CARGOES

OVET is able to handle many different cargoes, including:

- ❖ coal/(pet)cokes/anthracite;
- ❖ minerals;
- ❖ agricultural products (seeds/grains);
- ❖ biomass/GMP;



- ❖ offshore/density stones; and
- ❖ scrap.

OVET SERVICES

The services offered by OVET include:

FOUR FLOATING CRANES

- ❖ Lemniscate type;
- ❖ lifting capacity 3 x 25 tonnes, 1 x 36 tonnes;
- ❖ capacity per crane 1,000–1,450tph (tonnes per hour) free digging; and
- ❖ outreach 3 x 40 metres, 1 x 43 metres;
- ❖ lifting height above waterline 3 x 32 metres, 1 x 35 metres.

ONE MOBILE QUAY CRANE

- ❖ capacity 500tph.

INTERNAL TRANSPORT

- ❖ Caterpillar shovels; and
- ❖ mobile stackers.

ADDED VALUE FOR CUSTOMERS' PRODUCTS

- ❖ **screening:** OVET Screening is a subsidiary company of OVET Holding B.V. which is specialized in the screening of coals, petcoke, anthracite and cokes. When a client requests the processing of a party, the way in which this should be done is viewed internally. This way OVET can pursue the most optimal processing of products possible, for the client.
 - ☐ screening plants (mobile and fixed);
 - ☐ fractions: maximum of six; and
 - ☐ capacity: 200tph.
- ❖ **crushing:** during the process of screening, a crushing action can be executed. With this, for example the largest fraction can be crushed and can then be included in the screening process again, so that the crushed

material is divided amongst the fractions which are to be screened. Besides that, it is also possible to crush an in between fraction and reintegrate this in the screening process. Of course, products without a screening process can be crushed as well.

- ❖ **blending:** by combining several products into one blend, a final product with a better composition is created. This makes the client able to focus on a certain market.
- ❖ **de-ironing:** when a load of dry bulk contains parts of iron, this iron can be removed by using a de-ironing installation. This prevents damage to the receiving installations when unloading in a subsequent port.
- ❖ **compacting:** in order to prevent self combustion of (thermal) coal, OVET can compact the coal upon arrival of the shipment. At the storage site a pile is built up in layers with dumpers and wheel loaders which are compacting the core of the pile. The edges are carefully compacted by a vibrating plate. To finish a crust forming agent is applied in order to seal off the coal from wind and rain as much as possible.

ABOUT OVET

The history of OVET begins in 1957. This is the year when the French stevedoring company Manufrance decided to establish a local transshipping company for a major customer: the Association Cooperative Zélandaise de Carbonisation, also known as the Cokesfabriek (coke factory).

This factory focused on the production of cokes for the blast furnaces of French steelworks. Terneuzen was a favourable location, because it is well-situated with

regard to England and the Ruhr area, which is where the coals came from. The deep waterway was also a major advantage.

The main reason for choosing a location in Zeeuws-Vlaanderen was the substantial price difference between supplying coals via Rotterdam or directly to Terneuzen. On 2 May 1957, the company was established. The managing director at the time, Y.H.M. Simenel, started out with seven other employees and ran the company from the Grand Hotel Rotterdam in Terneuzen.

OVET decided to use floating cranes in order to be able to lighten vessels midstream as well as from the quay. The very first floating crane had a lifting capacity of six tonnes. The company was successful and steadily gained new clients, besides the coke factory.

The lifting capacity of the cranes increased from six to 16 tonnes and later to 25 tonnes. In 2007, the newest crane with a lifting capacity of 36 tonnes came into service.

From an annual 500,000 tonnes of transshipment during the beginning, OVET has grown and today handles as much as 11 million tonnes of transshipment cargoes each year.

The company now has dry bulk terminals in Vlissingen and Terneuzen and over 100 employees ensure services of high quality for the customers.

OVET can achieve a total unloading capacity of as much as 80,000 tonnes dry bulk per day, using its four lemniscate floating cranes. In addition to creating more capacity, OVET also makes use of mobile SENNEBOGEN material handlers.

OVET's high-quality offering comes from its strong focus on the questions and requirements of customers. Every OVET



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



employee knows their daily duty of providing good service and quality. This personal touch distinguishes OVET dry bulk terminal as a specialist and leader when it comes to the flexible handling of dry bulk.

TERMINAL TERNEUZEN (MASSAGOEDHARBOUR) AND TERMINAL VLISSINGEN (KALOOTHARBOUR)

With its floating cranes, OVET is active throughout the entire area of the Western Scheldt, in Vlissingen, Terneuzen and Ghent, but also at anchorage berths on the Western Scheldt itself.

TRI-MODAL PLATFORM

WATER TRANSPORT (INLAND NAVIGATION/ MARITIME SHIPPING)

The OVET dry bulk terminals are connected to the most important waterways in Europe. Access to the Rhine is gained through modern channel connections. The proximity of the North Sea ensures the OVET dry bulk terminals are very suitable for sea traffic. OVET is able to load and unload all inland navigation (lighters and tug-pushed barges) and maritime shipping (coasters, Handysize, Panamax and Capesize). All possibilities are therefore open for its customers.

ROAD TRANSPORT

OVET uses loaders to fill up trucks, which then pass a weighing platform to determine

the exact weight.

RAIL TRANSPORT

Since July 2013, OVET has had a completely renovated track and a new train loading system at the Vlissingen terminal. This ensures OVET is able to provide an even better hinterland connection for its customers. OVET has successfully proven that a train can travel to and from the German Ruhr area within 24 hours. On top of that, both dry bulk terminals have a good connection to the European railway network with good access to the Betuwelijn and the Corridor C.

FLEXIBILITY

With its four floating cranes, OVET is capable of working in the entire ARA (Antwerp–Rotterdam–Amsterdam) range. The floating cranes can be moved between the terminals in the ports of Vlissingen (Flushing) and Terneuzen, in a mere three to four hours. On top of that, lightering can take place at Terneuzen Rede and Everingen (on the Scheldt). Also, almost all equipment at the terminals is mobile. Flexibility and OVET belong together.

WAREHOUSING

In order to meet the needs of its customers, OVET has a large covered storage facility with six compartments, in which products can be stored while staying dry. The large warehouse is mainly used

for biomass, but other products can also be stored.

DEEPWATER ADVANTAGE

Further to recent dredging, vessels with draughts up to 16.80 metres, can enter the port. This means that a Capesize ship, which previously could discharge at about 155,000 tonnes, can now carry up to 3% more cargo such as coal and iron ore on board. OVET receives about a dozen Capesize ships every year, carrying cargo worth as much as \$30 million. So the difference is expressed not only in tonnes but also in cents.

The Joint Nautical Authority has facilitated this increase in capacity by taking a different and more realistic approach to calculating the maximum permitted draught through the Wielingen channel in the Westerschelde. Besides additional vessel stability data, tides and the influence of wind, swell and wave action on the vessel have been taken into account. This allows a realistic figure for draught to be determined even more precisely and means no additional dredging of the channel is required.

This is good news for shipping companies looking for ports for their Capesize ships. Vessels of this type could already enter Vlissingen as well as the classic deepwater ports, but now these ships can call at Vlissingen in North Sea Port with increased draught.



HES International opens its advanced Agri-shed at Port of Amsterdam



In September last year, HES International celebrated the official opening of its advanced Agri-shed at its terminal at the Port of Amsterdam (Westhaven). This new flat storage facility is designed specifically for agricultural products and incorporates advanced automation for optimized storage and handling processes.

The new shed, with a total capacity of 145,000m³ (approximately 80,000 metric tonnes), features over 16 dedicated compartments, ranging from 3,000 to 8,000 metric tonnes each. This versatile design allows HES International to accommodate a wide range of product categories, meeting diverse customer requirements. This new facility largely replaces the existing storage at the Vlothaven terminal, ensuring a seamless transition for clients.

The total agri storage capacity at the HES Bulk Terminal Amsterdam (HBTA) terminal now amounts to 150,000 metric tonnes.

The construction of this facility was made possible through a collaborative partnership with Cefetra and ADM, Europe's leading suppliers of agricultural ingredients for animal nutrition, which have been long-time valued customers of HES International across multiple terminals.

The opening ceremony, which took place on 12 September, was attended by

various HES clients and partners. Distinguished guests included the CEO of the Port of Amsterdam, Koen Overtoom, and Hester van Buren, Alderman at the Amsterdam Municipality.

"We are extremely proud to announce the opening of this new shed, which strengthens our leadership position in the industry. I would also like to extend my deepest gratitude to the entire HBTA team and staff, whose dedication and hard work made this achievement possible," said Jeroen van der Neut, COO of HES International.

"We are very pleased with the progress made by HES International in further establishing Amsterdam as a leading hub for agricultural products in Europe" added Koen Overtoom.

"We are proud to support HES' journey towards decarbonization as they invest in infrastructure to handle more sustainable commodities. This effort aligns perfectly with the anticipated coal phase out in the Port of Amsterdam and the decarbonization objectives of the Municipality of Amsterdam," said Hester van Buren.

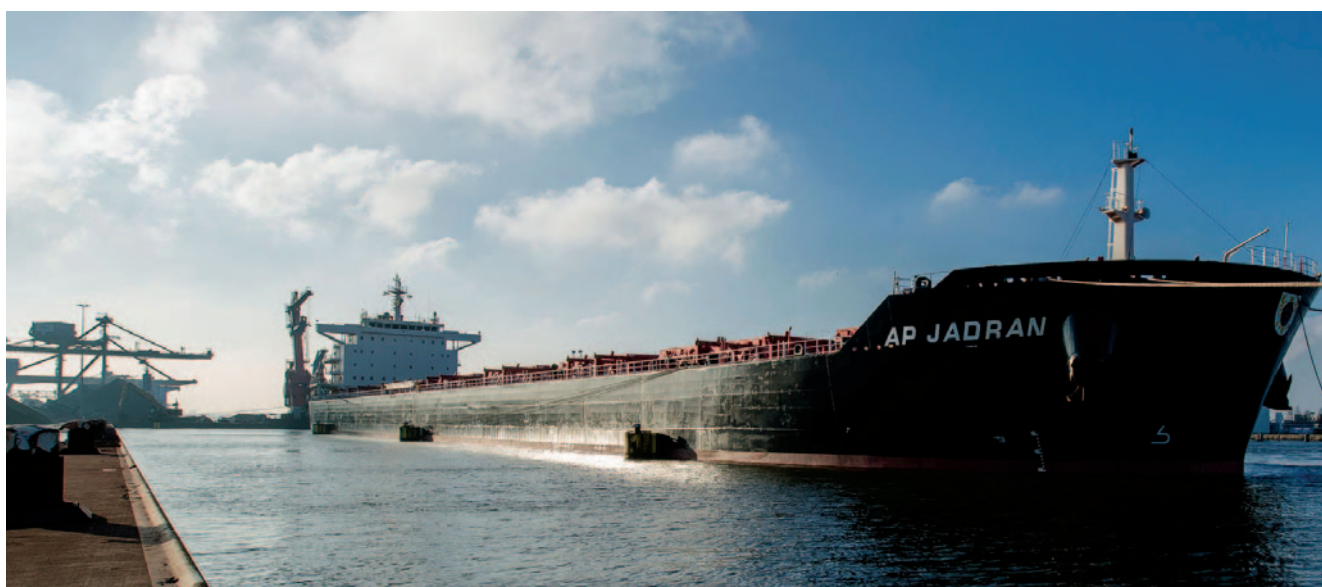
In addition to the Amsterdam facility, HES International is constructing an additional agri-shed at its terminal in Gdynia (Poland), which is scheduled to open at the start of 2025.

ABOUT HES INTERNATIONAL

HES International is one of Europe's largest independent bulk handling companies for dry, breakbulk and liquid 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 International is an important switch in the continuous delivery of essential building blocks for everyday life needed to develop, sustain and improve the world around us. 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. HES International 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 already 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 its shares.



Dutch seaports and FERM launch nationwide cybersecurity platform

Digital attacks pose increasing risks to nautical and logistics processes in Dutch seaports. To deal with cyber threats, the Seaports Trade Organisation (Brancheorganisatie Zeehavens, BOZ), the Ministry of Infrastructure & Water Management and the National Coordinator for Counterterrorism and Security (NCTV) have together developed and defined a strategy titled Cyber Strategy for Dutch Seaports. Based on this strategic plan, the FERM Foundation — already operational at the ports of Rotterdam and Moerdijk — will be transformed into a national cybersecurity platform for Dutch seaports as united within BOZ. The cooperative agreement was signed by all parties on 10 December.

Digital threats to ports are growing daily. Cyber incidents impact the entire supply chain due to the close interconnectedness of the various parties. To ensure greater resistance to this, port managers united under BOZ (Groningen Seaports, North Sea Port, Port of Rotterdam, Port of Moerdijk and Port of Amsterdam) will be working with local companies to ensure the port ecosystem becomes more digitally resilient. To this end, FERM's activities are being expanded and extended to the other Dutch seaports. FERM was founded in 2021 with the aim of fostering cooperation between companies in the Port of Rotterdam to raise corporate awareness of cyber risks and become the best digitally secured port in the world.

Boudewijn Siemons, Chair of BOZ and CEO of Port of Rotterdam Authority: "Cybersecurity is critical to the continuity and security of our ports. At a time when digital threats are becoming more sophisticated, we must take proactive and concerted action to protect our infrastructure and operations. Only by working together can we strengthen the resilience of our ports and prepare for the challenges of the future. It's great that the seaports have come together on this issue and we all realize just how hugely important it is. Together we will build on what FERM has already achieved in recent years."

JOINT AND NATIONAL STRATEGY

Over the coming period, a team will be working to establish the national FERM organization. Evelien Bras, former Director of FERM handed over the baton to Marijn van Schoote, formerly CISO



Marijn van Schoote (CISO Port of Rotterdam), Boudewijn Siemons (CEO Port of Rotterdam), Cas König (CEO Groningen Seaports), Peter van Parys (COO North Sea Port), Paul Dirx (CEO Port of Moerdijk) Koen Overtoom (CEO Port of Amsterdam).

(Chief information security officer) of the Port of Rotterdam Authority, effective 1 January 2025. In addition to being director of the FERM Foundation, van Schoote has also become project leader of nationwide cyber co-operation between seaports. This organization will play a pivotal role in co-ordinating the cyber resilience of Dutch seaports by exchanging threat information, sharing knowledge and providing necessary training for companies in the port area.

Evelien Bras: "I look back on these last few years with great pride and satisfaction, especially when I think of the major commitment and involvement demonstrated by companies and team members. We have been learning together continually and achieved a great deal as a result. With growing cyber threats from state actors, a need arose from within FERM to take a major step that cannot be achieved with organic growth alone. I am proud to say that this step is now being taken and the value of FERM is being extended and expanded into a nationwide platform with its own profile for each port area."

ABOUT THE BOZ

Seaports are essential to the Netherlands and Europe. Dutch seaports with connected logistics networks make global trade possible. They are operational centres for companies in the industrial and energy clusters, providing employment and contributing to prosperity. The Seaports Trade Organisation (BOZ) unites the five nationally significant seaports; Groningen Seaports, North Sea Port, Port of

Rotterdam, Port of Moerdijk and Port of Amsterdam. BOZ focuses on issues that transcend individual seaports, representing the interests of our member ports and promoting knowledge exchange and networking among seaport organizations.

ABOUT THE PORT OF ROTTERDAM

The port of Rotterdam is a cornerstone of the Dutch and European transport and economic systems. In addition to the significant economic and social value the port holds in the Rotterdam-Rijnmond region, it also benefits the logistics sector and businesses that import and export in the rest of the Netherlands and Europe through employment, added value, revenue and business locations.

The Port of Rotterdam Authority's core tasks are the sustainable development, management and operation of the port and maintaining the smooth and safe handling of shipping. The aim of the Port of Rotterdam Authority is to strengthen the port's position as a logistics hub and future-proof industrial complex. In doing so, it's not size, but rather quality that takes precedence. The Port of Rotterdam Authority takes responsibility for the impact of the activities in the port on the climate and immediate surroundings. The health and safety of current and future generations are an integral consideration in its decision-making, including in its co-operations with businesses.

FACTS AND FIGURES FROM THE PORT OF ROTTERDAM AUTHORITY AND THE PORT OF ROTTERDAM

Port of Rotterdam Authority: approximately 1,300 employees, revenue approximately €842 million and gross investments €295 million. Port area: 12,500ha of port area (land and water, of which over 6,000ha is industrial sites). Length of the port area: over 40km. Cargo throughput: approximately 439 million tonnes of freight a year. Shipping: approximately 28,000 seagoing vessels and 90,000 inland vessels annually. Employment: approximately 193,000 jobs (directly and indirectly Rotterdam-Rijnmond). Added value: €30.6 billion, 3.2% of the Dutch gross domestic product (GDP). The port of Rotterdam generates over 500,000 jobs and provides an added value of over €60 billion for the Netherlands.

The Konecranes logo is displayed in a bold, orange, sans-serif font at the top left of the page. The background of the entire advertisement is a photograph of a large blue Konecranes mobile harbor crane at a port. The crane is lifting a white container, and its boom is extended high into the sky. The crane's body features the 'EIMSKIP' logo and the text 'KONECRANES GOTTWALD' and 'ESP.8 BARA'. The crane is mounted on a multi-axle trailer. The sky is clear and blue, and the ground is a paved port area with yellow markings.

KONECRANES

Double the lifecycle performance

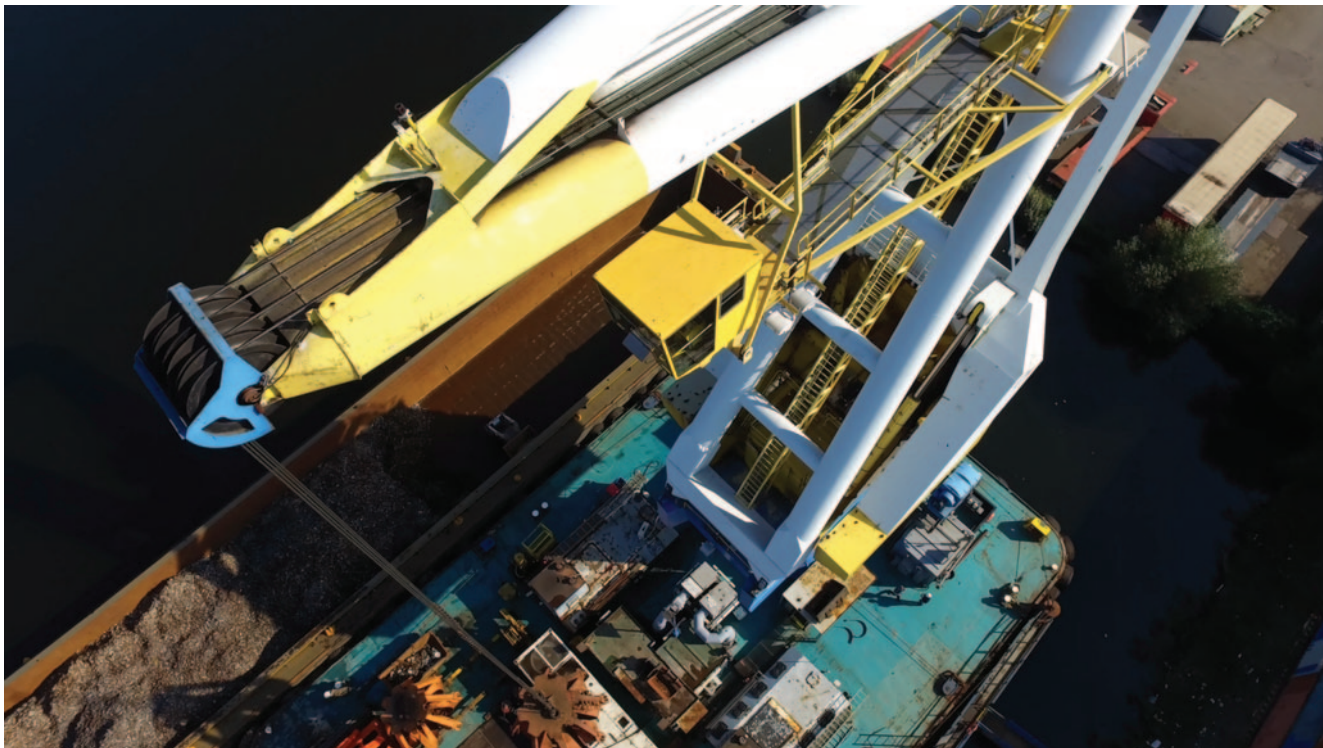
Konecranes Gottwald Mobile Harbor Cranes stand for a high throughput in container handling. The Generation 6 cranes are designed for all ship sizes, up to the super post-Panamax class with 22 container rows. By increasing the classification, we have also doubled the service life of the cranes. The result: a strong performance – for a long crane life.

Increase the efficiency of your container handling with our new Generation 6!



Just scan this QR code to configure the right crane model for your needs
mhc-product-advisor.konecranes.com

Maja Stevedores: an expert in storage and transshipment



Since 1972, Maja Stuwadoors has been a household name in the world of storage and transshipment. The family business distinguishes itself through flexibility, speed and a compact organization. From the head office in Amsterdam, the organization is managed with a great deal of passion for the stevedoring trade. The company has over 40 well-trained and motivated employees.

LIEBHERR CRANE FOR LOADING AND UNLOADING

For loading and unloading, Maja has a Liebherr LHM 550 ultramodern mobile harbour crane. This unit is fully electric, so there are no CO₂ emissions. The capacity of this crane is around 500 tonnes per hour in bulk (depending on the type of bulk). In addition to the above-mentioned crane, there is a hydraulic harbour crane and large loading shovel present. Maja also has various floating cranes that can be used multifunctionally.

STORAGE FACILITIES

The right storage facilities for each type of product or material are essential to maintain quality and ensure safety. This is especially true for the storage of fertilizers, minerals, agro-products and biomass.

BULK AND BREAKBULK

Maja has a warehouse for the storage of bulk and/or break bulk, with a total of three compartments of 750m² each. The water depth at the storage facility is 9.6m.



The quay with a length of 400m is especially suitable for Handysize bulk carriers with a dwt of 28,000–30,000dwt.

At the Vlothaven Terminal, since January 2023, Maja has had three hectares of storage area. This is located on deep water (11.50m draught) with a quay length of 215m. The terminal is suitable for open storage of many types of bulk and breakbulk goods.

SAFE STORAGE

The terminal has a very comprehensive environmental permit, which makes safe storage of all kinds of waste and recycling materials possible.

The terminal is equipped with a special liquid-tight floor and has an advanced brooding detection, surveillance and dust control system. By means of special cameras there's 24/7 surveillance. Mist cannons ensure dust control if necessary.

Maja ensures that all goods are stored under the best possible conditions. It can offer weighing facilities on location. Multiple options are possible, such as

dividing the warehouse into smaller compartments or other customization. Maja uses various protocols for the storage of agri-bulk, minerals, fertilizers and biomass and/or breakbulk.

TRANSFER OF BULK AND BREAKBULK

Maja specializes in the transshipment of bulk, but also has extensive experience with breakbulk. It offers fast, efficient handling of its customers' goods. It has its own quays, floating and fixed loading and unloading cranes, other machines and equipment, and experienced staff to handle all orders professionally. Maja's flexibility enables it to respond quickly to customer requirements.

TRANSFERRING BULK: DAMAGE-FREE TRANSFER

Maja has been loading scrap into bulk carriers for various companies for many years. It distinguishes itself mainly by carrying out the transshipment as damage-free as possible. In addition, it works quickly and efficiently.

- ❖ **Fertilizer:** fertilizer is a special product that has specific requirements for loading and unloading, in which Maja has extensive experience. It ensures tight grippers and accurate unloading to minimize waste of cargo.
- ❖ **Large volumes:** Maja also transships minerals such as talc, dolomite and bentonite in large volumes, whereby the prevention of damage and waste plays a major role. Maja has the necessary permits to store various



types of bulk materials. Maja uses strict protocols for storage, maintenance and cleaning of equipment, to prevent mixing of substances. It also provides the transshipment and storage of agro products and minerals for animal consumption and is GMP+ certified for this. Maja is also at home in the market for transshipment of coal and storage and transshipment of biomass (for example wood pellets).

TRANSFERING BREAKBULK: FAST AND EFFICIENT

Maja knows everything about the transshipment of breakbulk, such as big bags, steel (including coils), paper, project cargo, etc. With its varied fleet, including self-propelled floating cranes and experienced staff, it also guarantees fast and efficient loading and unloading of all goods.

HEAVY LOADS

Maja can also handle large pieces up to a maximum of 140 tonnes with its Liebherr LHM 550 crane, which is stationed at the Vlohaven terminal in Amsterdam.

CRAFTSMANSHIP, QUALITY AND SAFETY

The management of Maja Stuwadoors Group places a very high priority on quality, safety, health and environmental protection. To reinforce this, they have drawn up a policy statement and KAM is discussed extensively at all meetings in the organization. The KAM system contains important documents that guarantee qualitative working methods and the safety and health of employees and the environment. The KAM system is assessed internally on a monthly basis and is also audited annually by an independent external certification body. The latter body issues the intended certificates after positive findings.

OWN EQUIPMENT

Maja Stuwadoors Group has storage sheds and a dozen taps in possession, both floating and shore cranes. In addition, there is the necessary rolling stock, such as skid steer loaders, excavators, shovels, sweepers, aerial platforms and forklifts. There are also various pontoons and Maja's own push boat available. All this equipment is kept in good working condition by the company's own Technical Service and the

production. In addition, they are periodically inspected by external specialists.

CERTIFIED EMPLOYEES

All Maja's employees have the necessary function-oriented training. The TD and field service employees also have a valid VCA diploma. Crane operators are also certified Company Emergency Response Officers.

CERTIFICATION

Maja also handles the transshipment of compound feed and grains for human or animal consumption. The company is certified for this with Good Manufacturing/Managing Practice (GMP+). This ensures that all regulations for this type of product are met. Think of cleaning loading areas, transshipment and storage of cargo and official controls.

Maja meets the applicable quality standards and is qualified for the ISO 9001 certificate. It is also certified for the BLU code for the safe loading and unloading of seagoing vessels and thus meets the Seagoing Vessels Loading and Unloading Act.

The best bulk truck loader in the world



Dino advantages:

- + Saves time and money
- + High capacity, 40 or 80 m³/h
- + Safe and easy to operate
- + Low-dust and hygienic
- + Easy to clean
- + Mobile and flexible in use
- + Steel or stainless steel version
- + Low maintenance
- + ATEX versions available
- + Modular expandable

The Dino is the world's best bulk truck loader for loading powders efficiently using a screw conveyor. For more info visit www.dino.nl



vanBeek
THE STANDARD IN SCREW CONVEYING

Rail track extension opens at Verbrugge Zeeland Terminal

Verbrugge International is a logistics service provider with broad knowledge of various industries. It is an ideal 'gateway to Europe', thanks to its strategic locations, customer focus, operational quality and high safety standards. Verbrugge is strategically located in the ports of Vlissingen and Terneuzen, in the logistical heart of Northwest Europe, between the ports of Antwerp and Rotterdam. The company handles a wide range of dry bulk products, as well as containers, heavy-lift cargoes, liquid bulk, tobacco, and oil & gas.

VERBRUGGE'S DRY BULK AND BREAKBULK FACILITIES

- ❖ **Agricultural products:** Verbrugge Terminals is a strategic hub in North West Europe for the storage and transshipment of grains and oil seeds, such as soya beans, wheat, corn and rapeseed. The Verbrugge GMP+ warehouses offer a storage capacity of more than 300,000 tonnes.
- ❖ **Minerals and fertilizers:** Verbrugge Terminals specializes in the storage and transshipment of various bulk products for the fertilizer, mineral and glass industry, such as borates, phosphates, limestone, nepheline, sodium carbonate and technical urea.
- ❖ **Biomass:** sustainability is key for the future. Biomass, such as wood pellets is fundamental for reaching the European sustainability goals the coming years. Verbrugge offers space and flexibility to handle and store wood pellets in a safe and controlled environment.
- ❖ **Forest products:** an ideal European hub for wood pulp. Verbrugge has one of the largest designated terminals for wood pulp in the world. Its terminals in Vlissingen are also the wood pulp hub for Europe. From its terminals, Verbrugge has daily barge connections with Rotterdam and Antwerp: an excellent opportunity for exporting pulp by container. In addition, the terminals in Vlissingen have excellent rail connections for transporting pulp by railway wagons. Verbrugge has daily scheduled train connections to the European rail network.
- ❖ **Steel and metals:** for the storage, transshipment or distribution of steel products such as coils, steel sections, sheets and pipes, Verbrugge is a well-established and experienced partner. In addition to its storage solutions, it is highly reliable in terms of distribution, customs formalities, as well as transportation. Verbrugge offers transport of products with different lengths and widths. Its multifunctional cargo trailers enable the transport of items up to 28 metres long and 3.50 metres wide. At its terminals in Vlissingen, Verbrugge is perfectly equipped to handle all types of steel. It can offer indoor and outdoor storage facilities, where its terminals

have extended opening hours from 7:30 till 23:30 hours, offering maximal efficiency for various multimodal transport options for distribution of goods.

OPENING OF RAIL TRACK EXTENSION VERBRUGGE ZEELAND TERMINAL

In September last year, the extended rail tracks at the Verbrugge Zeeland Terminal in Ritthem, Vlissingen-Oost were officially put into use by Martin Verbrugge, CEO of Verbrugge International.

Verbrugge Terminals is one of the Dutch parties that, from the European Climate, Infrastructure and Environment Executive Agency and Connecting Europe Facility for transport (CINEA CEF), has received funding for infrastructure upgrades to improve European rail freight transport. This funding from the European Union has enabled Verbrugge to extend two rail tracks at the Verbrugge Zeeland Terminal.

The Verbrugge Zeeland Terminal regularly transships general cargo like steel and wood pulp products as well as military equipment to various destinations throughout Europe. Rail transport is an important transport modality to enable fast and sustainable connections to the European hinterland. By extending the tracks, multiple and longer trains can be efficiently loaded and unloaded at the same time. This expansion of the rail capacity is needed to accommodate further growth in rail transport.



Slight growth in cargo transshipment in North Sea Port

In 2024, the North Sea Port companies recorded a volume of 66.3mt (million tonnes) of seaborne cargo transshipment, an increase of 0.7% compared to 2023. Inland navigation rose by 4.4%. These increases are encouraging in themselves, but especially so given current economic and geopolitical developments.

Seaborne transshipment increased by 0.4mt of goods compared to the serious dip in 2023. This slight improvement is due to North Sea Port's distinctive profile as a bulk port: dry bulk and breakbulk (general cargo) throughput increased significantly. The diversification of activities at the port often provides a counterbalance in uncertain times — on the other side of the scale, liquid bulk transshipment fell. The decline of specific products linked to a (cautious) industrial sector is making its impact felt in the port.

Seaborne transshipment with Great Britain actually increased by more than a quarter, making it North Sea Ports' number one trading partner. The impact of Brexit seems to be a thing of the past in terms of tons of goods transshipment, and North Sea Port continues to strengthen its role as a port firmly positioned in the heart of Europe.

Inland waterway transshipment is prospering, posting growth of just under 5%. North Sea Port's ideal location at the intersection of Western European inland waterways, the excellent port infrastructure and modal shift projects aimed at transporting more goods via inland waterways are boosting this sustainable form of transport. And, not least, the distinctive nature of the products handled in the port — specifically bulk goods — lends itself perfectly to inland navigation.

30 HECTARES OF LAND SET FOR RELEASE

The challenges for the years ahead are many — certainly on the geopolitical front, with the Russia-Ukraine war and ongoing tensions in the Middle East, as well as the United States and possible trade barriers. In addition, there has been a slowdown in the energy transition and there remains an urgent need for a level and competitive playing field within Europe and a European Industrial Deal.

However, North Sea Port looks forward to significant investment in the coming years. The raft of upcoming investments for 2025 in the energy, offshore, logistics and circularity sectors offer the prospect of additional jobs and additional financial security for the port authority. North Sea

Port expects to release 30 hectares of land by 2025, the same amount as in 2024.

The challenges of industry are often plainly reflected in the transshipment figures — which is clearly the case with the reduced figures for liquid bulk transshipment. However, once industry regains its momentum — in the context of a European industrial and sustainability policy — the tide may turn, putting North Sea Ports back on course as a leading European port.

BULK PORT PAR EXCELLENCE

North Sea Port remains, above all, a bulk port. Dry and liquid bulk still make up a full three quarters of transshipment.

Dry bulk increased again (+2.1%) and continues to account for more than half (54%) of all transshipment (35.9mt). The rise was the result of increased supplies of iron ore, wood pellets, chemicals and soya beans. The transshipment of construction materials kept pace, while that of rapeseed decreased.

Breakbulk also grew (+7%) and continues to represent 15% of throughput (10.2mt). Within that figure, cellulose transshipment increased, while sheet steel decreased.

Transshipment of rolling stock, ro/ro, remained at the same level at 3.7mt, with the segment also retaining the same share of total transshipment (6%).

Liquid bulk transshipment fell (−3.5%), and now accounts for a little over a fifth of total maritime transshipment (22%, 14.6mt). This reflects a decline in petroleum products, biodiesel and basic chemicals — products which are characteristic of industry.

Container transshipment witnessed a loss in tonnage (−18%), posting a total of 1.8mt or 175,000 TEU (−50,000 TEUs). The share of containers within total seaborne cargo transshipment remained the same (3%).

In terms of commodity types, North Sea Ports saw an increase in agricultural products (+4.9%, a partial recovery after losses in 2023), ores and metal residues (+5.8, due to increased volumes of iron ores), fertilizers (+5.7%), chemical products (+7%), vehicles and machinery, and other manufactures (+14.7%, including cellulose). Solid fuels remained static. A decrease was observed in food products (−13%, including less rapeseed), petroleum products (−4%), crude minerals and construction materials (−3%) and metal industry products (−11%, reduced steel transshipment).

The import/export ratio for seaborne transshipment was 70/30%, which represents a slight rise in export share over the years.

GREAT BRITAIN PUSHES UNITED STATES OUT OF FIRST PLACE

With 6mt of cargo throughput and solid growth (+26%, +1.2mt), Great Britain is firmly in first place among North Sea Port's main trading partners — as such, the impact of Brexit is (hopefully) a thing of the past. The United States experienced its second consecutive year of decline (−6% = −300,000 tonnes), moving from first to second place, with a total of 5.1mt. Trade with Sweden increased (+8%, +300,000 tonnes), pushing the country up to third place with a transshipment volume of 4.3mt.

Canada again took fourth place, followed by Brazil, Norway, Spain, France, Russia and Turkey in tenth place.

Of total seaborne cargo traffic, Europe accounted for 58% (+2%), North America 14% (no change), South America 14% (−1%), Africa 7% (no change) and Asia 3% (−1%). Finally, Oceania's share (4%) remained stable.

GROWTH ALSO SEEN IN INLAND NAVIGATION

Cargo transshipment via inland navigation totalled 64.2mt in 2024. This increase of 4.4% almost made up for the losses in 2023 compared to 2022 (which was the second record year in a row).

Liquid bulk handling rose by 7% to 34.5mt, partly thanks to increases in liquid petroleum fuels and basic chemicals. Dry bulk grew by 5% to 23.3mt due to additional transshipment of animal feeds, sand and gravel and crude minerals.

Containers declined by 15% to 2.2mt. In terms of TEUs, there was a 17% drop to 240,000 TEUs. Ro/ro barges accounted for 0.1mt (no change). Breakbulk decreased slightly by 3% to 4mt.

The import/export ratio remained unchanged at 41/59%.

ABOUT NORTH SEA PORT

North Sea Port manages, operates and develops the 60km-long cross-border port area from the Dutch port of Vlissingen to Ghent in Flanders. The port is versatile, multimodal, and offers space for development. Since its existence, it has always ranked among the top of the European seaports and — with its 250 staff members — it actively contributes to more prosperity in the region.

At the port of Nordenham, Rhenus handles a mix of dry bulk, liquid bulk, and project cargo. Source: Rhenus Group.

German ports & terminals

Germany's foreign trade powerhouse

Jay Venter

Multi-cargo logistics specialist: Rhenus Group services several German ports

The Rhenus Group, a logistics specialists operating worldwide, is an important player in the German logistics landscape, handling a wide range of cargo types via several inland and seaports. Each port specializes in specific goods and services, ensuring tailored solutions for diverse industries. Rhenus focuses on customer-oriented solutions, market knowledge and innovation at all its sites. These principles are the key to the ports' success in adapting to the changing requirements of the industry.

At the port of Nordenham, Rhenus handles a mix of dry bulk, liquid bulk, and project cargo. This includes materials such as coal, minerals, construction materials, diesel, molasses, and fish oil, as well as complex shipments like subsea cables, cable drums, and various steel products. To enhance its capabilities, the port recently acquired a Liebherr LHM 600 mobile harbour crane in December 2024, significantly improving operational

efficiency. A new contract with a sea energy cable manufacturer further underscores the port's role in supporting renewable energy projects. With over 1,500 metres of pier length, 5,000 metres of rail track, and extensive storage facilities for covered (245,000m²), uncovered (282,000m²), and liquid goods (148,000m²), the port boasts a flexible infrastructure. A pier with a crane and RoRo ramp further supports versatile cargo handling. The extensive hinterland offers developed and undeveloped areas that are ideal for new industrial settlements and strengthen Nordenham as a key logistics hub with growth potential.

In Wilhelmshaven, operations span two terminals: the Bulk Terminal Wilhelmshaven (BTW) in the outer harbour and the Multipurpose Terminal in the inner harbor. The BTW, Germany's only Capesize berth, handles coal imports with services like screening and washing, processing nearly 2 million tonnes in 2024.

While coal remains essential for the steel industry and power plants, the terminal is increasingly focused on renewable energy like liquid bulk goods. The Multipurpose Terminal, located in a tide-free zone, handles diverse dry bulk cargo such as construction materials and minerals, offering services like silaging raw materials into silo trucks. The location is preparing for the steel industry's transformation, which is shifting raw material flows. A key development is the growing use of Hot Briquetted Iron (HBI), a porous, compressed iron briquette that serves as a high-quality, eco-friendly iron carrier for steel production. While technological adjustments are still necessary, the terminal is actively addressing these adaptation measures to meet the evolving demands of the industry. The terminal is also equipped to handle other evolving input materials for steelmaking and raw materials for electric furnaces.

Port of Brake: high activity in breakbulk and project cargo handling



Source: J.MÜLLER/A.Rhode.

At the Port of Brake, cranes are operating at full capacity. The year 2024 was remarkably active for general cargo and project cargo handling.

Despite logistical challenges, such as two railway bridge closures, the port demonstrated its efficiency through trimodal infrastructure and streamlined handling processes.

GENERAL CARGO ON THE RISE

Brake has proven to be a reliable partner for customers worldwide, especially in the breakbulk sector. Wind turbine components, cable drums for energy projects, rolling stock, and large-diameter pipes for import and export illustrate the port's broad capabilities.

"We have established ourselves as a high-performance hub for breakbulk and project cargo. Our road and waterway connections are a key advantage, particularly for large-volume and sensitive goods," explains Jörg Kaplan, Head of Sales for Breakbulk Handling at J Müller.

HEAVYWEIGHTS AND PRECISION WORK

Recently, a 134.41-tonne generator from Erfurt, with impressive dimensions, was

loaded for transport to Houston, USA. The handling process, from the inland vessel to the quay warehouse and into the sea vessel's hold, required utmost precision. As usual, the operation employed specially adapted lifting gear and high-performance cranes.

Equally demanding was the loading of tower sections from Portugal and wind turbine blades from Poland, destined for export to Thailand and Australia. The enormous dimensions and sensitivity of these components made each handling operation a unique challenge.

CABLE DRUMS FOR THE ENERGY TRANSITION

Brake also supports energy transition projects. Massive cable drums weighing up to 80 tonnes each were loaded for the Conneford-Cloppenburg-Merzen (CCM) corridor project. These drums play a crucial role in expanding.

GERMANY'S GREEN POWER GRID

LARGE PIPE PROJECT FOR HAMBACH AND GARZWEILER

Another highlight was the handling of specialized pipes for a 45-kilometre water pipeline in the Rhineland. The pipeline will be used to fill the former open-pit mining

areas of Hambach and Garzweiler. Over 9,000 pipes, each up to 12 metres long and 2.235 metres in diameter, will be imported via Brake and transported further by rail over the coming years.

CHALLENGES

Recruiting skilled personnel is becoming increasingly difficult — both in administrative and operational areas.

At the same time, the reliable transportation of large, heavy goods is growing more challenging. It is increasingly common for such goods to be delayed or unable to commence their journeys.

OUTLOOK FOR 2025: MORE PROJECTS, MORE POTENTIAL

"Demand in the project cargo sector is expected to rise, driven by the expansion of renewable energy and related infrastructure, as well as traditional plant projects," emphasizes Kaplan. Brake focuses on flexibility and innovative solutions to tackle future challenges. With strong infrastructure, a strategic location, and a dedicated team, the Port of Brake remains a key hub for general and project cargo handling — not only for Lower Saxony, but far beyond.

New high-performance crane for the seaport of Brake: J. MÜLLER and Liebherr are setting new standards in port logistics



*J. MÜLLER's new LPS 600 series crane, developed jointly by Liebherr and J. MÜLLER, at its site in Brake, Germany.
Source: J. MÜLLER.*

J. MÜLLER has put a new, state-of-the-art crane into operation at its site in Brake, Germany that sets new standards in port logistics. The LPS 600 series crane, developed jointly by Liebherr and J. MÜLLER, is the most powerful crane of its kind in Germany and was specially designed for the requirements of the seaport of Brake.

It can be used for both bulk and general cargo handling and replaces old crane systems from the 1970s. The total investment in the crane is €7.5 million. In addition, a further €2.5 million will be invested in a hopper and a technical connection to the existing silo system. This enables the new crane to unload ships directly into the silo system. The connection is an ideal addition to the two pneumatic grain elevators already in the harbour. These investments in modern technology strengthen the competitiveness of the port of Brake.

The crane is part of a modernization concept that was developed by J. MÜLLER when it took over the crane operation in 2021.

Olaf Lies, Lower Saxony Minister for Economic Affairs, Transport, Building and Digitalisation said: "The new high-performance crane at the seaport of Brake is an impressive example of the innovative strength and future-oriented development of our port infrastructure in Lower Saxony.

"This investment not only strengthens the competitiveness of the Brake site, it also sets new standards in port logistics. The crane, developed by Liebherr in collaboration with J. MÜLLER, combines

state-of-the-art technology with sustainable efficiency and shows that we in Lower Saxony are ready to take on the challenges of the future and actively address them. The investment in this crane is a clear commitment to strengthening the port of Brake as an important logistics centre in our region.

Cedric Witten, Head of Technology/IT at J. MÜLLER said: "The co-operation with Liebherr was excellent. Our team, and in particular our technical and operational colleagues, as well as our experienced crane operators, were in close contact with the manufacturer to ensure that the crane meets our specific requirements.

"This crane sets new standards in port logistics and is proof of Liebherr's innovative strength and technical expertise. We are delighted to have completed this project together with J. MÜLLER and are sure that the crane will significantly increase efficiency in the Port of Brake," said Eric Hein, Sales Manager for Mobile Harbour cranes at Liebherr-MCCtec Rostock GmbH.

The crane, which sits on a specially developed gantry, is characterized by its impressive performance. Liebherr gantry cranes combine space-saving gantry travelling gear with efficient mobile harbour crane technology. Customized product solutions enable the efficient transport of the transshipped goods on the crane track, especially at quays with limited space. When handling bulk goods, the LPS 600 can achieve throughputs of up to 800 tonnes per hour under ideal conditions for the transshipped goods

handled in Brake. It has an outreach of up to 61 metres. When transshipping general cargo, the crane can lift loads of 90 tonnes up to a reach of 27 metres and 65 tonnes up to a reach of 35 metres. The electric drive reduces carbon emissions and energy costs, and is therefore in line with J. MÜLLER's ecological and economic sustainability goals. In addition, the new cab design of the LPS 600 improves driver comfort and safety.

The intensive development and construction period lasted 21 months, and approx. 650 tonnes of steel were used. Manufactured in Rostock, Germany, the crane was shipped to Brake in one piece, which was a major logistical challenge for a crane of this size. Before shipping, all the necessary permits and documents had to be obtained, and the entire logistics chain had to be planned and co-ordinated in detail. A heavy-cargo ship capable of transporting heavy and oversized loads was contracted for the transport. Due to the size of the crane, the ship could not pass through the Kiel Canal (between the North Sea and Baltic Sea) and had to take the alternative route across the North Sea. After final installation, calibration and various test runs, as well as training for the crane operators, the crane was put into operation immediately.

"With this investment, we are sending a clear signal for the future of the port of Brake. The new crane enables us to handle our transshipment activities even more efficiently and strengthens our position as a leading logistics service provider," explained Jan Müller, CEO of J. MÜLLER AG.

Mukran Port: Finnish company Outokumpu invests €40 million at the site



The Mukran Port impresses with excellent hinterland connections, modern infrastructure, generous space and a strategically favourable sea connection an increasingly attractive location for industrial settlements and future-oriented projects.

Mukran Port on the island of Rügen has gained a strategically important partner for the further development of the site in Outokumpu, a leading global supplier of sustainable stainless steel. The Finnish company will build an innovative plant for the production of biocarbon at Mukran Port in the coming years. With an investment of around €40 million and the creation of up to 25 qualified, permanent jobs, Outokumpu is underlining the importance of the port for future-oriented technologies and sustainable production.

The use of bio-based raw materials is a sustainable way for Outokumpu to reduce direct emissions in the steel production process. In the new plant, biocarbon is produced from secondary wood raw materials using an innovative high-temperature process. The fine granulate obtained in this way, which looks like 'black sand', is then shipped via Mukran Port to Tornio in Finland for further processing into biocoke pellets. The biocarbon produced at Mukran in the future can be used to replace conventional coal or fossil energy sources in various stages of stainless steel production.

With this technology, Outokumpu is setting a milestone towards more climate-friendly steel production, as around 50% of Outokumpu's direct emissions could be reduced through the use of biocoke.

Henry Forster, Managing Director of Mukran Port, emphasizes the strategic importance of the move: "Outokumpu's decision in favour of Mukran is the result of an intensive process. It shows how attractive our port is for companies that rely on multimodal transport chains. The planned delivery of raw materials by rail

and shipment of the end product by ship will strengthen the site's logistics diversity. With Outokumpu, we are not only gaining a world-leading company in its sector, but also increasing the attractiveness for other potential industrial customers and supporting the transformation of the location with regard to new energy sources."

Stefan Erdmann, Chief Technology Officer at Outokumpu, also emphasizes the advantages of the location: "Mukran Port convinced us with its combination of existing industrial space, modern infrastructure and excellent hinterland connections. The short sea routes to Finland also enable efficient and more environmentally friendly logistics. We look forward to further developing this location together."

The plant is not only technologically innovative, but also contributes to the regional energy transition. The by-products from the production process, in particular the waste heat generated, will be fed into the district heating network on the island of Rügen.

Sassnitz's mayor, Leon Kräusche, welcomes this sustainable use: "By feeding waste heat into the district heating network, we are not only making a contribution to ecological energy supply, but also expect stable energy prices for the citizens of Sassnitz."

With this settlement, Mukran Port confirms its status as a key location for innovative and sustainable projects. Outokumpu is an example of how industry and the environment can be brought into harmony - a strong signal for the economic future of the region.

ABOUT MUKRAN PORT

The Mukran Port on Rügen offers everything that makes a modern multifunctional port on a total area of almost 430 hectares with ferry, rail, multipurpose and offshore terminals as well as extensive production and storage areas. In addition to offshore wind industry projects, Mukran Port is particularly supporting the transformation of the site into a green large-scale commercial location.

ABOUT OUTOKUMPU CORPORATION

Outokumpu is accelerating the green transformation as the world's leading producer of sustainable stainless steel. The business is built on the principles of the circular economy: Outokumpu products are made from up to 95% recycled material. This steel reaches society in a variety of applications, for example in infrastructure, mobility and household appliances.

Outokumpu is committed to the 1.5° target to limit climate change. With a carbon footprint that is up to 75% below the industry average, Outokumpu also supports its customers in reducing their emissions. Together they are working towards a world that lasts forever. Headquartered in Helsinki, Finland, Outokumpu employs around 8,500 people in almost 30 countries. Outokumpu Corporation is listed on the Helsinki Stock Exchange on the Nasdaq. In Germany, Outokumpu has two stainless steel plants in Krefeld (NRW) and Dillenburg (Hessen) as well as a service centre in Sachsenheim (BW).

Hamburg Terminals opt for Steelpaint's new corrosion protection system to repair STS cranes

German container terminals are applying Steelpaint's new corrosion protection system, Stelcaterc, to repair existing paintwork on ZPMC ship-to-shore cranes, following the Chinese manufacturer's seal of approval in 2023.

Stelcaterc the world's first low-VOC (volatile organic compounds), isocyanate-free polyurethane coating system, is being used to repair damaged original coatings on ZPMC cranes operated at container terminals in Hamburg, Bremerhaven and Wilhelmshaven.

Ahrensburg-based Adamium, which is contracted to maintain the terminals' cranes, has completed work at the Wilhelmshaven terminal and will now carry out remedial coatings work to cranes at Hamburg and Bremerhaven over the next two to three years.

Dmitry Gromilin, Chief Technical Supervisor at Steelpaint, said: "When protective coatings on ship-to-shore cranes get damaged a two-component epoxy is typically used for spot repairs, but if you don't get the mixing right, the paint will blister and be ineffective in protecting against corrosion. It's a long process and curing takes time."

A two-component epoxy application can take weeks before an STS crane or gantry can return to normal operations. This is because drying time is heavily dependent on substrate temperatures. And if this is too low and the ambient temperature rises, the temperature difference can preclude these coatings from being applied until more favourable conditions prevail.

"Taking a ship-to-shore crane out of commission costs the terminal money, delaying container loading/unloading operations. They wanted a ZPMC-approved one-component system that would obviate mixing errors, reduce material waste, speed up the drying process and reduce the time cranes are out of service," said Steelpaint Sales Director Frank Müller.

"With Stelcaterc-L, the coating can be applied and cured within a working day," he said.

The decision to select the new coating follows successful patch testing on equipment operated by one of Europe's largest container terminals and logistics groups. The success of these trials and subsequent testing by ZPMC led to the original equipment manufacturer certifying



German container terminals are applying Steelpaint's new corrosion protection system, Stelcaterc, to repair existing paintwork on ZPMC ship-to-shore cranes.

Stelcaterc for use on existing and newbuild cranes.

Achim Wallat, Adamium Project Manager, said: "Terminal operators want an effective, reliable and safe corrosion protection system capable of reducing maintenance costs and downtime. Compared with two-component epoxies, Stelcaterc-L is a very impressive, durable coating system that we now specify for all our crane refurbishment projects."

Taking four years' research and development, Stelcaterc is a single-pack moisture-curing paint based on a polyurethane free of Isocyanates. With a very low solvent content, the new coating can be applied by brush, roller or spray in temperatures ranging from -5°C to 50°C and environments where relative humidity is as high as 98%.

Suitable for protecting steel exposed to corrosivity category C5, and meeting ISO12944 standards for 25 years' protection, the Stelcaterc range offers rapid drying times and high dry film thickness (DFT) of between 80 and 120µm.

"It is ideally suited for maintenance projects where time is of the essence," said Müller. "As Stelcaterc can be applied 24/7,

nighttime repairs are possible, reducing the time and costs associated with touch up work. Terminal operators no longer have to take a crane out of service for weeks on end for coatings work."

Operators of terminals in Asia are currently patch testing the Stelcaterc technology, with Steelpaint expecting orders for full coat applications in coming months.

ABOUT STEELPAINT GMBH

For more than 40 years, Steelpaint has enhanced the life and durability of heavy-industry facilities, particularly in the maritime sectors. Thanks to one-component polyurethane resins, the Germany-headquartered company's special high-tech coatings have raised the technological bar in corrosion resistance, offering impressive benefits over conventional epoxy coatings solutions.

Steelpaint is a subsidiary of the coatings company Emil Harrasser, founded in Kitzingen, Germany in 1890. Its products are used widely in port and offshore facilities, sheet piling, internal and external linings, tanks, bridges, and ship structures. They can be used in combination with cathodic protection.

JSC “RIKON” kicks off the year with new RPS-1600 crane installation at Aktau Port

JSC “RIKON” has successfully completed the installation of its RPS-1600 portal crane at the Kazakhstan national port of Aktau. This advanced double jib level luffing crane, with a maximum lifting capacity of 63 tonnes and outreach up to 32 metres, is set to significantly improve the port's operational efficiency by handling a variety of cargo, including bulk materials and containers.

The Aktau Port, established in 1964, serves as a vital maritime hub on Kazakhstan's western coast, strategically positioned along the Caspian Sea. It facilitates essential connections to Azerbaijan, and Turkmenistan, playing a crucial role in transnational trade routes that link Europe and Asia. With its modern terminals designed for diverse cargo handling, the port supports both freight and passenger transportation.

In recent years, the port has made strides in implementing environmentally friendly technologies, resulting in increased cargo volumes and investments that bolster its modernization efforts. The installation of the RPS-1600 crane increases the port's lifting capacity and contributes to its modernization, helping to strengthen Aktau Port's status as one of the leading transport hubs in Central Asia.



TGN Port successfully completes its first trial shipment of copper concentrate

Terminal Graneles del Norte (TGN) successfully completed its first trial shipment of copper concentrate as part of its expansion project. In this operation, 10,800 tonnes of Codelco's calcine were loaded onto a Handymax vessel, showcasing the terminal's ability to handle the increasing demand for copper concentrate. TGN Port is located in Mejillones Bay at the heart of Chile's mining region. It has a strategic location, close to the most important copper district in the world, which contains world famous mineral deposits.

The project includes the construction of a new berthing site with full automated

handling equipment for receiving, storage container staking, transport and shiploading of copper concentrate.

Empresa Constructora Belfi S.A., is the construction company that chose Bedeschi as one of the suppliers of the new project. The company designed and supplied three belt feeders designed to receive copper concentrate from rotating containers, an underground conveyor of approximately 400m length in the storage yard and a pipe conveyor of approximately 950m to connect the storage yard overland conveyor to the dock facility.

The most innovative aspect of this expansion is the integration of automation

technology, enabling minimal human-machine interaction. The entire process runs on renewable electric power, reinforcing the company's dedication to sustainability and its efforts to lower its carbon footprint.

Bedeschi has a green product portfolio of modern and eco-friendly solutions designed to minimize impacts in terms of noise, dust emissions, material dispersion etc. and that meet the strictest environmental standards. In fact, the pipe conveyor was chosen to guarantee the handling of copper concentrate from the storage to the ship without any dispersion of materials in the surrounding area to avoid environmental pollution.

The first shipment test not only validated the system's operability, but also affirmed the project's high standards of safety, efficiency, and sustainability. The TGN expansion is set to begin operations in January 2025, with an annual capacity of four million tonnes.



Telestack secures prestigious contract with Mibau Stema (UK) for handling aggregates from self-discharge vessels

Telestack has announced a significant new contract with Mibau Stema, secured in collaboration with long-standing UK Port representative, Cooper Handling Group. This project underscores Telestack's continued commitment to delivering innovative material handling solutions to leading industry players.

Mibau Stema Group is a major supplier of high-quality aggregates and construction materials, specializing in sustainable and efficient solutions for infrastructure projects across Europe. With a strong network of quarries, self-discharging vessels, and strategically located terminals, Mibau Stema ensures reliable and cost-effective delivery of raw materials to customers in the construction and civil engineering sectors.

The contract involves the delivery of a high-capacity 2,500tph [tonnes per hour] + – TS 52 (52 metre – 170ft) radial telescopic stacker, which will play a vital role in Mibau Stema's ship offloading operations at the Port of Sheerness, UK. This advanced unit will be seamlessly integrated into Stema's onsite discharging system, designed to offload materials from self-discharging vessels and efficiently place them into designated bays to meet the needs of their various grades and applications.

Carl Donnelly, International Sales Manager at Telestack commented; "Building on the success the previous 2,000tph off-loading stacking system operating in Newcastle, UK with Mibau Stema years

ago, we are thrilled to agree a second project with this customer. This is a testament to Telestack's reputation for delivering high-quality, reliable stacking systems tailored to the most demanding applications. It is great to be chosen once again as the trusted manufacturer for their self-discharge stacking systems, which will operate seamlessly alongside their fleet of self-discharge vessels. We take great pride in continuing to support Mibau Stema's operations in handling their aggregates effectively, which play such pivotal role in the logistic's chain for construction/civil engineering projects throughout the UK."

Telestack has a proven track record of success working alongside Cooper Handling Group on numerous high-profile projects over the years. This collaboration ensures Mibau Stema benefits from our shared expertise and the highest standards of service and support.

The installation of this state-of-the-art

KEY SPECIFICATIONS

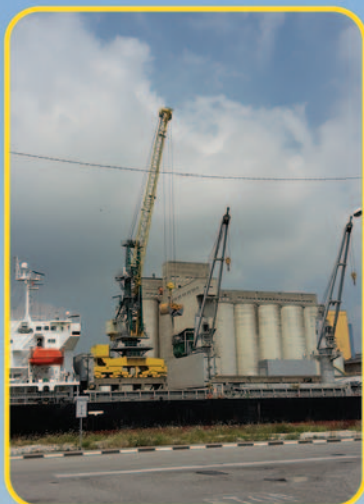
Capacity:	2,500tph + – 1400mm wide belt
Material:	aggregates at 1.6m ³
Stockpile height:	up to 18m, maximizing bay utilization and storage efficiency
Functionality:	high-capacity system that enables precise material handling and separation into individual storage bays
Installation and commissioning:	set for 2025

stacker reaffirms Telestack's position as a global leader in material handling innovation, meeting the demands of world-class operations. Telestack are proud to contribute to the success of Mibau Stema and look forward to the commissioning of this pivotal project.



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A titanic project: new rail logistic sugar terminal – north of Italy



THIS PROJECT, INTENDED TO STORE 60,000 TONNES OF SUGAR, RICHLY DESERVES THE NAME "TITAN PROJECT"

A few years ago, a leading German group was interested in a huge project intended to transform the Italian logistic sugar market. The group approached B.S.P., which immediately accepted the challenge.

After almost two years of works, a futuristic and high-tech sugar storage railway terminal, has been inaugurated. This new facility which includes four big silos, a truck loading area and a railway receiving station, has now been officially opened.

STORAGE

DOUBLE WALL SILOS

Double walled silos are a special design purposely studied for large storages of heavy products. They are a type of steel/concrete hybrid solution.

BSP erected the first cylinder shell by applying its special double folding system technology. This allows the creation of cylinders from steel coils which are profiled and folded directly on site by special automated former machines to the diameter foreseen by the project. While the first cylinder rises, a steel panel mesh is directly assembled and fixed along the outer silo wall. Once the first wall is completed, former machines are moved 25–30cm away from it in order to start the erection of the second shell that will work as a form work.

The 25–30cm gap between the two walls of the silo will be filled in concrete.

The use of Magnelis steel for the internal wall of the silos ensures a suitable material for food contact and the concrete filling between the two walls provides a natural insulation against condensation.

This double-wall design means that there is no need for internal vertical bars which are normally welded to the silo wall

for stiffening reasons. Moreover, the double-wall technology reduces operations on site, and speeds up assembly times, thus positively affecting the economical aspect.

SILOS ANTI-EXPLOSION ROOF — ATEX

This special roof is a structural element comprised of self-supporting male panels fixed to the cylinder and to the top of the roof, and female panels operating like the explosion venting area.

The female metal panels are designed and produced to perform as security venting devices against explosion, in compliance with 2014/34/UE enclosure III+V. The female panels are mounted alternately to the self-supporting male panels.

All panels converge to a very thick central top where every panel is fixed and locked.

To the calculation of the explosion effects and cylinder shell resistance to residual pressure, the opening of the female panels is verified by breaking the special connection across the largest part of the roof at a pressure inferior to the bolts locking on the central top of the silo.

This BSP-certified know-how works like the lid of a coffee mocha: after venting the explosion, the female panels reposition in their natural place and the special bolts only need to be replaced. This system is safer than any other venting device because it removes any residual safety risk like a venting membrane flying away.



EXTRACTION

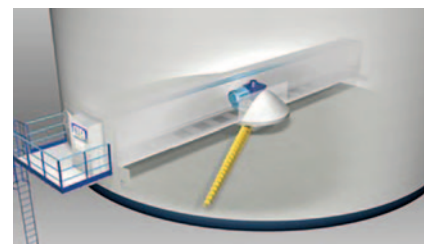
ROTOBOX PLANETARY SCREW EXTRACTOR

One of the most difficult challenges faced by BSP was extracting the sugar from the large flat-bottom silos.

This challenge was overcome by the installation inside the silos of the Rotobox planetary extractors — a hi tech product resulting from BSP's engineering expertise.

According to the planetary logic, the reclaimer collects the product across the whole flat bottom of the silo and conveys it towards the central outlet avoiding air injection inside the product. The Archimedes screw, though immersed into the product, moves radially around the vertical axis of the silo (sweeping) while rotating on its own axis (main rotation).

The walkable tunnel beam protects the motorizations lodged inside and allows for maintenance operations even in full silo conditions.



TRAIN RECEIVING PIT & TRUCK LOADING STATIONS

TRAIN PIT

The design of the train reception pit was very compelling.

The pit had to have the capacity as an entire wagon and, at the same time, had to be projected to receive different types of products in case the plant is upgraded in the future.

The system had to include:

- ❖ a railway weighbridge system able to



adapt to different lengths trains and wagons;

- ❖ an integrated dust aspiration system compliant to ATEX regulations for food contact.

BSP succeeded in designing and realizing a unique train pit which is able to unload one 1,500-tonne train in less than six hours at a speed of 200 tonnes per hour.

TRUCK LOADING STATION

The automatic and compartmentalized loading stations are equipped with weighbridges.

Sophisticated scheduling software allows drivers to book the exact loading



time in order to streamline operations and avoid unnecessary queues and delays. Special mobile loaders with a bidirectional auger allow the trucks to remain stationary during loading activities.

CONCLUSIONS

This project can be considered as a milestone, both for Italian sugar logistics and for BSP itself, since it has been able to make use of its technological heritage and experience acquired in more than 50 years of activity — resulting in the creation of a futuristic plant.



Effective, affordable monitoring for smaller machinery

Whilst machine monitoring is an essential requirement in many manufacturing and industrial applications, not all require the more substantial investment of high-integrity, stand-alone MMS (Machine Monitoring System) or a MPS (Machine Protection System). However, keeping a continuous eye on critical rotating machinery is still an important requirement, helping to ensure its smooth running and avoiding the potential of a catastrophic failure.

Condition monitoring specialist SENSONICS recognized the increasing demand for continuous protection and monitoring of smaller rotating plant such as; fans and blowers, centrifuges, pumps, motors and conveyors to name a few, which is why it developed its PZDC Accelerometer. Available in a number of options, these two-wire (+screen) loop-powered 4-20mA sensors have become an established and more affordable means of smaller machine monitoring.

A key reason for the success of this flexible, cost-saving solution is that the PZDC Accelerometer (g) or velocity (mm/s) vibration transmitter can be directly connected to an existing DCS (Distributed Control System), a PLC (Programmable Logic Controller), a BMS (Building Management System), or a SCADA system.

The PZDC is available as a standard general purpose device, or there is an intrinsically safe option for use in hazardous areas with potentially explosive atmospheres including hydrogen or dusts, conductive or non, also for use in mines with methane and dust. Submersible versions are also available with polyurethane cable and IP68 (10bar) sealing, along with specially engineered options for sub-sea applications, using specialist corrosion resistant materials and over-moulded cable entries to withstand greater pressures.

The PZDC can be supplied with a top, side exit integrated cable, or with an integral connector and separate connector cable assembly, standard (plain) or armoured options as well as more specialist LSZH options.



Martin Engineering opens new business unit in Kazakhstan

Bulk handling solutions expert Martin Engineering has announced fresh expansion in Central Asia with a new business unit in Kazakhstan.

Based in the country's largest city and commercial centre, Almaty, in the South East of Kazakhstan, the new venture will act as a regional hub enabling Martin to bring its full range of products and services to the fast-growing mining sector across Central Asia.

Kazakhstan is the world's ninth-largest country by land area (approximately 1,000,000 square miles) and has a diverse geology comprising a rich array of metal ores and mineral resources. Consequently mining and minerals production is playing an increasingly important role in the Kazakh economy with most materials exported.

The decision to establish a business unit in Kazakhstan builds on the Martin Engineering's success in the country to date. That includes delivering innovative conveyor belt cleaning solutions to one of Kazakhstan's largest copper producers to maximize plant efficiency and productivity.

Now Kazakhstan's mining and mineral processing companies have access to a broader portfolio of exceptional conveyor products, such as Martin's revolutionary



CleanScrape® belt cleaners, versatile Orion SQC2S™ secondary belt cleaner, and high-performance air cannons featuring SMART™ series nozzles to ensure optimal material flow.

Kazakh customers can also benefit from

faster service response times, improved supply chain logistics and new product trials, as well as enhanced problem-solving services like Walk The Belt™ and tailor-made Foundations™ training for in-house maintenance teams.

Martin Engineering has opened a new business unit in Almaty in Kazakhstan.



IBAU Hamburg completes detail engineering for silos in Beijing



Bulk handling specialist IBAU Hamburg has successfully completed the detail engineering contract for three multi-chamber silos for its valued customer MACO. During IBAU Hamburg's recent visit to MACO in Beijing, the entire detail engineering package was finalized and the acceptance certificate was signed.

The three multi-chamber silos (12 chambers per silo) will become the largest silos of their kind in the world with a diameter of 30m and a total height of 126m. In future, 24 different types of materials will be pneumatically or mechanically conveyed into the respective

silos and discharged in a unique design.

IBAU Hamburg is grateful to MACO for placing its trust in its systems. The co-operation between the two companies has been extremely constructive. IBAU Hamburg has also expressed thanks to participating companies: Peter und Lochner GmbH; AML Anlagentechnik GmbH; Qlar Pneumatic Conveying UK Ltd; AUMUND Machinery Technology Co. Ltd (China); Haver Technologies Tianjin Ltd; the local Design Institute; and, of course, the whole IBAU project team involved in this legendary project.

IBAU Hamburg looks forward to further co-operation in the subsequent realization phase.

ABOUT IBAU HAMBURG

IBAU HAMBURG is a world-renowned company in the field of silo technology and pneumatic conveying systems for dry pulverized materials.

Key competences include not only plant design, engineering and Greenfield projects, but also rebuilds and upgrades, allowing customers to improve the performance and reliability of existing plants or terminals.



Conveyor talk — holding it all together

CONVEYING ADVICE



THE CRITICAL IMPORTANCE OF GOOD ADHESION IN RUBBER PLY CONVEYOR BELTS

Although the technical term 'adhesion' is well known within conveyor belt engineering circles, it is rarely mentioned and very unlikely to be taken into consideration by buyers and operators of multi-ply conveyor belts, even though the adhesion properties are a critical influence on both performance and longevity, writes Rob van Oijen. Here is how and why:

What is adhesion? Rubber belts with 'multi-ply' textile reinforcement are the most commonly used type of

conveyor belt for dry bulk handling. The inner carcass is effectively the backbone of the belt because it provides the inherent characteristics such as its tensile strength and elongation (elasticity or 'stretch' under tension). The construction consists of a single or multiple layers of extremely strong but flexible synthetic fabric ply such as polyester and nylon. Each layer is covered by a thin 'skim' of rubber that bonds them together. Different rubber compounds are used for the outer protective covers and skim, although in some cases the polymers may be the same. Usually, different fillers are used to create the skim rubber. To increase the adhesion, the fabrics are pre-treated with a specialized coating. Without this treatment, the fabrics would be too smooth and too resistant to effectively absorb the polymer, elastomer or rubber in a manner that achieves acceptable ply adhesion.

Adhesion testing — good ply adhesion is vital to avoid delamination.



The term 'adhesion' when used in relation to conveyor belts is the adhesive bond between the inner ply layers to adjoining

layers and between the surfaces of the outer plies and the rubber covers. Basically, it is what holds the conveyor belt together. Adhesion is defined as the force required to separate (pull apart) the adhesion between adjoining plies and/or between the plies and the outer covers. This is usually measured in Newtons per millimetre (N/mm).

Why are adhesion levels important?

Adhesion between the plies and the covers is fundamental to the durability, functionality and structural integrity of a conveyor belt. Conveyor belts continually flex over pulleys and drums and this repeated flexing action stresses the ply adhesion. It is therefore essential for long-term durability that the belt has adequate ply adhesion to withstand this stress without delaminating, which is



Delamination — layers separate and the belt literally falls apart.

where the various layers separate and the belt literally begins to fall apart.

Good adhesion also helps the belt resist adverse environmental conditions, such as extreme temperatures and humidity, as well as enhancing the belt's ability to trough and carry heavy loads without the risk of ply separation, making it suitable for more demanding applications.

Having the optimum level of adhesion has an enormous impact on the creation and ongoing reliability of splice joints. Adhesion levels that are too high can cause significant problems in the making of both hot and cold vulcanized joints. At the opposite end of the scale, and far more commonplace, is an inadequate level of adhesion because this compromises the strength of the joint, even when the workmanship has been of the highest standard. Unreliable splice joints are a very common cause of unplanned stoppages to carry out repairs.

Causes of poor adhesion. There are numerous reasons why a belt can have inadequate adhesion properties. As with nearly all other inadequacies in conveyor belts, the root cause is the use of low-grade (low cost) raw materials, the quality of the rubber and production methods that are centred on economy rather than being end-performance and longevity driven. Low-grade ingredients such as polymers, fillers such as carbon black, vulcanizing agents, plasticizers, resins and curatives all have a negative impact on adhesion levels. Other causes include moisture ingress, overheating or overcooking during the vulcanization process, poor or non-compliant rubber formulation in combination with the fabric coating and the use of bulking fillers such as chalk or clay. Another factor is the type and quality of the fabric treatment itself, which plays an essential role in both short and long-term adhesion.

Yet another cause is the omission of antioxidants in the rubber compound that



Ozone & UV exposure degrades rubber and can seriously impair adhesion.

Longevity determines the true cost of any conveyor belt.



prevent damage caused by exposure to ground level ozone and ultraviolet light. The absence of such important additives is purely cost driven. Tests reveal that up to 90% of the rubber belts used in Europe and Africa are not resistant, despite the fact that ozone and UV significantly accelerates the oxidation of rubber, resulting in its premature degradation and loss of mechanical strength. Over time, as the adhesion properties of the rubber diminish, splice joints become more and more unreliable and makes repairing them increasingly difficult.

LIFE SHORTENING

There is no doubt that longevity determines the true cost of any conveyor belt. Premature wear and catastrophic damage caused by rips and tears are well acknowledged causes of early belt replacement, especially with 'cheap' imported belting.

For the same reason, delamination caused by inadequate adhesion properties is increasingly becoming a major 'life shortener'. With so much to get right, and so much that can go wrong, it is hardly surprising that adhesion plays such a key role in the operating life of a conveyor belt. Compromises in the pursuit of a price advantage serve only to benefit the manufacturer, never the end-user.

ABOUT THE AUTHOR

Rob van Oijen is Manager Application Engineering for Fenner Dunlop Conveyor Belting in the Netherlands. He has specialized in conveyors for over 17 years, supporting businesses throughout Europe, Africa, the Middle East and South America and is one of the most highly respected application engineers in the conveyor belt industry.



How Donaldson filtration solutions can raise

Cement manufacturing offers some of the toughest conditions around for dust collection. So, it's no surprise that choosing the right filtration solution is one of the most important decisions a facility can make. Donaldson is one of the world's most respected companies in this area and for the demanding work inside cement plants its technologies have proven extremely valuable in improving efficiencies, lowering energy usage, and delivering cost savings.

The infrastructure of a cement plant is a significant investment, and the working lifetime of a plant will span decades. But as technology advances, and pressure increases to up productivity levels, plants can find themselves needing to make changes to boost their efficiency. Ultimately, the decision on what change is made will depend on the age of the facility, when it last had its filtration upgraded, and the long-term goals of the plant.

Donaldson offers a strong range of solutions to help customers select the right one for their facility. For those looking to replace their existing filtration system or invest in a new filtration system, the portfolio from Donaldson includes a comprehensive range of cartridge offerings, PowerCore®, and bag collectors, featuring the new Dalamatric® G2. These offer cutting-edge technology to manage even the toughest, most sticky dust challenges. Or for those wishing to upgrade their existing systems, there's an option to switch to Spunbond Pleated Bag Filters.

OPTING FOR A NEW SYSTEM

For those opting for a new filtration system in their cement facilities, Donaldson's Dalamatric® G2 Dust Collector is one of the most effective solutions around. The Dalamatric® G2 offers advanced filter media that dislodges even the most challenging dust cakes, and which includes Donaldson's patented Dura-Life™ bag filters, with their unique envelope providing greater movement of the bag.

The dust collector's modular design allows straightforward and flexible installation, and owners and operators enjoy the ease of maintenance they deliver. Maintenance can be a famously time-consuming, unpleasant, and costly process. However, the Dalamatric® G2 keeps total cost of ownership low through reduced maintenance costs and the need for fewer filters over the plant's lifetime.

Employing the revolutionary Radial Seal filter and fixed cages reduces the number of steps required to change a filter from ten to five, slashing the time taken for

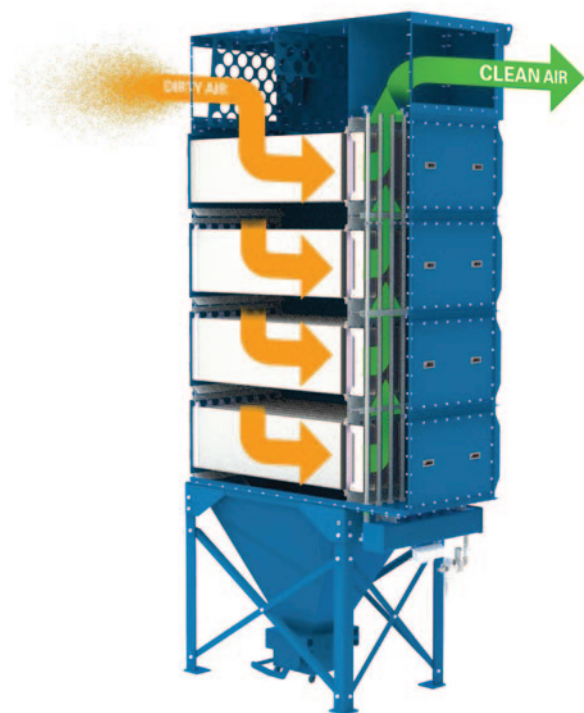


changeouts by up to 75%. Furthermore, this smart collector comes equipped with Donaldson's intelligent iCue™ Connected Filtration Technology, which continuously monitors the equipment and provides operational insights through automated alerts.

UPGRADING THE EXISTING INSTALLATION

For companies wanting to upgrade their existing filtration system rather than replace it, Donaldson has an alternative solution — its Spunbond Pleated Bag Filters, available for all popular pulse-jet baghouse manufactures.

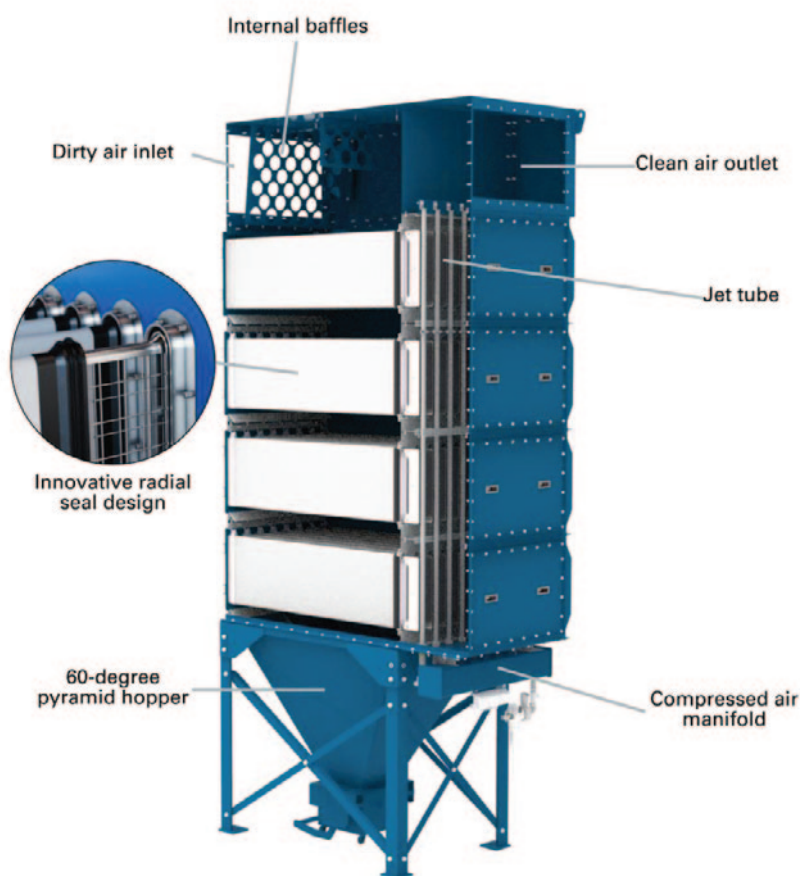
Spunbond Pleated Bag Filters deliver a longer filter life, greater efficiency, and higher energy savings than traditional filter



productivity and profitability for cement companies

bags, making them an attractive choice. Their pleated design means they have a larger surface area than traditional designs, which means more filtration power from each bag. It also allows them to lower the average differential pressure drop, which translates to lower energy usage over the life of the filter, as it enables the fan supporting the baghouse to be adjusted to more efficient levels. This leads to improved airflow and energy savings. This increase in surface area also contributes to their extended lifespan, typically lasting two to three times longer than conventional options. As a result, maintenance and replacement costs are significantly reduced.

They're a user-friendly option too, as they come with built-in cores allowing them to replace both the filter bag and its supporting cage inside the baghouse. As their name suggests, Spunbond Pleated Bag Filters are made with spunbond polyester media, which offers superior durability compared with alternatives and enables them to deliver impressive results in even the harshest conditions. The Spunbond substrate used in these pleated filters is specially engineered to withstand exposure to harsh chemicals, moisture, and abrasive dust. This durability ensures consistent performance, even under challenging conditions commonly found in cement manufacturing environments. Furthermore, these filters can operate effectively at a maximum temperature of 121°C (250°F), making them suitable for a wide range of processes.



Another advantage of Spunbond Pleated Bag Filters is their shorter bag height, which creates a larger dropout area within the filtration system. This design minimizes the likelihood of bag abrasion, reducing wear and tear while further extending the filter's service life. This configuration also

improves dust collection efficiency, ensuring that particulate emissions remain well within regulatory limits and enhancing overall operational effectiveness.

CHOOSE THE RIGHT PATH FOR YOU

Spunbond Pleated Bag Filters and the Dalamatric® G2 Dust Collector demonstrate the innovation and experience of Donaldson in solving one of the biggest industrial challenges in efficient cement production.

The right choice will depend on the plant, but ultimately both solutions provide significant advantages in terms of filtration efficiency, ease of maintenance, and energy saving.

ABOUT DONALDSON COMPANY, INC.

Founded in 1915, Donaldson is a global expert in technology-led filtration products and solutions, serving a broad range of industries and advanced markets. Diverse, skilled employees at over 140 locations on six continents partner with customers — from small business owners to R&D organizations and the world's biggest OEM brands. Donaldson solves complex filtration challenges through three primary segments: Mobile Solutions, Industrial Solutions and Life Sciences.



Overcoming sticky challenges in



Efficient conveyors are crucial in material handling. Optimized belt systems and proper maintenance reduce disruptions and keep operations running smoothly.

Handling sticky materials in mining and minerals processing can create significant obstacles from equipment blockages and excessive wear to increased maintenance and operational inefficiencies. Successfully addressing these challenges requires specialized expertise and tailored solutions, according to Dewald Tintinger, Technical Manager at Weba Chute Systems.

“Sticky materials are notorious for

causing inefficiencies in transfer systems,” says Tintinger. “To mitigate these issues, it is essential to partner with experienced solution providers who understand the complexities of material behaviour and transfer point design.”

SMARTER DESIGNS FOR SMOOTHER OPERATIONS

The flow of sticky materials can be

improved significantly with thoughtful transfer point designs that minimize blockages and build-ups. Tintinger explains that optimized chute geometry is critical to maintaining material movement.

“By designing chutes to reduce impact forces and prevent material degradation, we create transfer point systems that operate more smoothly. Using durable linings, such as ceramic or rubber, further protects the equipment from wear and extends its service life,” he explains.

Controlling moisture levels is another vital consideration when dealing with sticky materials. Tintinger points out that excessive moisture increases material adhesion and build-up, disrupting flow. “Incorporating proper drainage, dust suppression or material conditioning systems helps maintain ideal moisture levels, which reduces the risk of blockages.”

ADDRESSING MATERIAL VARIABILITY

Sticky material challenges are often exacerbated by

Monitoring belt speed is essential for maintaining optimal flow. Accurate measurements help identify potential issues and improve overall efficiency.



material transfer systems

inconsistent material properties, such as segregation or oversized particles. Tintinger highlights the value of blending systems and controlled crushing or screening to produce consistent material characteristics that promote smooth handling.

“These adjustments ensure the material moves effectively through the system, reducing the likelihood of disruptions,” he adds.

A HOLISTIC APPROACH TO MATERIAL HANDLING

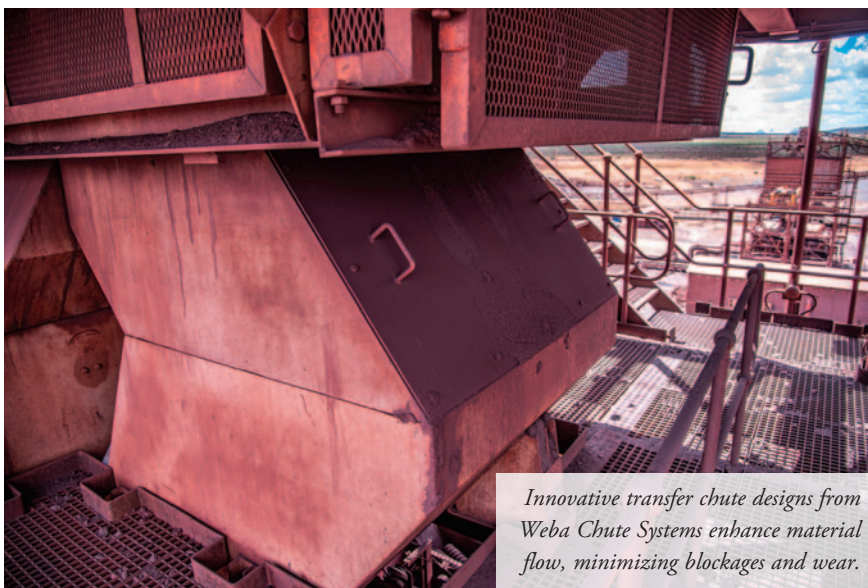
An integrated view of the entire material handling process is essential for long-term success. Belt cleaning systems, for instance, are indispensable for preventing sticky material carryback that can lead to blockages at transfer points.

“Combining primary and secondary belt cleaners with tracking systems keeps belts clean and aligned, reducing wear and operational delays,” Tintinger notes.

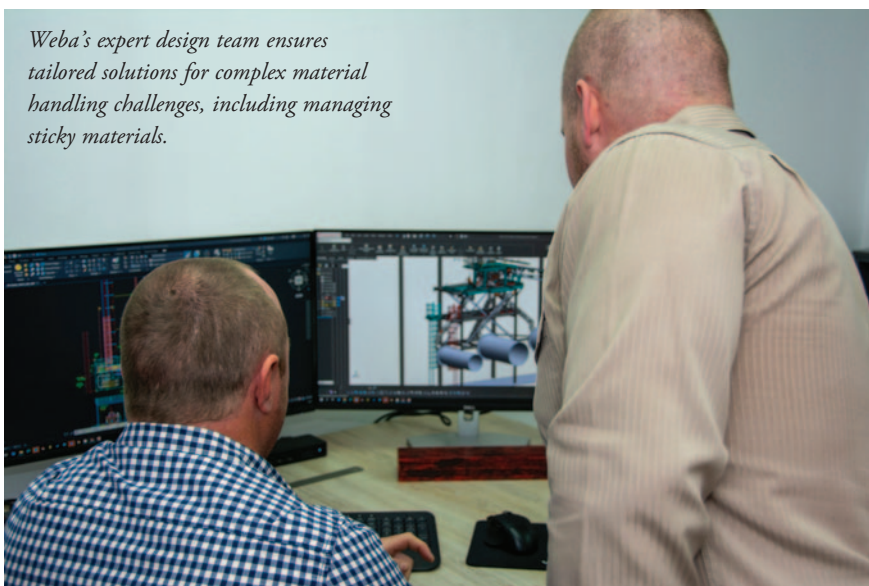
BOOSTING PRODUCTIVITY AND EFFICIENCY

Tintinger emphasizes that well-designed transfer points offer far-reaching benefits. “A proactive approach to managing sticky materials not only reduces maintenance and downtime but also optimizes efficiency and productivity across the operation.”

“By addressing these challenges holistically, Weba Chute Systems continues to deliver innovative solutions that keep mining and minerals processing plants running smoothly, even in the stickiest situations,” he concludes.



Innovative transfer chute designs from Weba Chute Systems enhance material flow, minimizing blockages and wear.



Weba's expert design team ensures tailored solutions for complex material handling challenges, including managing sticky materials.



Weba's specialized chutes ensure smooth operations by controlling material impact and preventing degradation.

*A successful and fully completed
Load-out installation.*

Setting the standard

in dust control and loading
solutions with DCL Inc.

Since 1981, DCL Inc. (Dust Control Loading Systems), based in Charlevoix, Michigan, USA, has developed advanced solutions to address complex loading challenges in diverse industries. Whether

supporting ground-based operations or large-scale barge and shiploading, DCL's technologies have set new benchmarks worldwide, delivering unmatched efficiency, safety, and reliability.

DCL INC. ENHANCES PORT SAFAGA WITH MODERN DUST CONTROL SOLUTIONS

In 2015, Egypt's Ministry of Transportation awarded DCL a pivotal contract to modernize the load-out facilities at Port



Safaga on the Red Sea. The port's original shiploader, outfitted with a basic telescopic spout but lacking an effective dust-collection system, often left the area clouded in phosphate dust. DCL addressed this issue by designing and installing advanced equipment that not only met rigorous environmental standards but also vastly improved dust control and air quality throughout the port.

DCL INC. ENHANCES FILTRATION AND LOADOUT EFFICIENCY FOR PHOSPHATE HANDLING AT PORT SAFAGA

DCL Inc. was tasked with upgrading the filtration capacity and designing an efficient loadout system to handle pulverized phosphate rock at an impressive 1,000tph (metric tonnes per hour) for open shiploading at Port Safaga. This project aimed to address several critical goals:

- ❖ **Lightweight Equipment Design:** Keeping the new equipment lightweight was essential to maintain compatibility with the port's existing mounting structures, avoiding costly structural modifications.
- ❖ **EPA Compliance:** DCL's solution prioritized environmental standards, achieving compliance by significantly reducing visible dust emissions.
- ❖ **Seamless Integration:** Advanced technology enabled the new loadout system to integrate smoothly with the plant's existing control systems, enhancing operational efficiency



Removal of an inefficient loading spout at Port Safaga.



Pre-installation assembly of compact filter module cartridges.



A compact filter module being hoisted into position.





without disrupting established workflows.

DCL'S DUST CONTROL SOLUTION WITH THE CFM1618 COMPACT FILTER MODULE

To achieve superior dust control at Port Safaga, DCL implemented three essential

pieces of equipment, beginning with the CFM1618 compact filter module. This innovative module is designed to capture dust directly at its source and reintegrate it into the material flow, removing the need for manual dumping and increasing overall efficiency.

Working in tandem with the heavy-duty loading spout, the CFM1618's compact design eliminates the need for extensive ductwork, reducing both installation time and complexity. Constructed from lightweight aluminium, this module delivers high-performance filtration at 6,000 cubic feet per minute (CFM) with an optimized 5.68:1 air-to-cloth ratio, making it an ideal solution for demanding bulk material handling environments.

DCL'S PIVOTING GIMBAL AND RETRACTABLE LOADING SPOUT: ENHANCING FLEXIBILITY AND PRECISION

As part of its comprehensive solution for Port Safaga, DCL Inc. implemented a pivoting gimbal to enhance the load-out system's adaptability and maintain vertical alignment throughout operations. This

articulation point between the boom and the load-out equipment ensures that the load-out spout remains vertical even as the boom moves up and down, a critical feature for efficient, precise loading.

Connected to this pivoting gimbal is the robust OV66HD-45 retractable loading spout, designed with 45 feet of vertical travel capacity. This heavy-duty spout accommodates the high demands of open ship loading by delivering controlled material flow across significant distances while maintaining alignment to minimize dust and spillage.

Together, the pivoting gimbal and OV66HD-45 spout deliver flexibility, precision, and operational reliability, supporting a seamless loading process that aligns with the project's stringent dust control and efficiency goals.

The OV66HD-45 loading spout is equipped with advanced safety features, including two over-travel limit switches and three strain switches on the lifting cables. Engineered for capacities up to 1,000mtph (million tonnes per hour), the spout's internal components enhance material flow, while the outer sleeve effectively controls dust.

ENHANCED DUST CONTROL WITH THE DEADFALL DISCHARGE SYSTEM

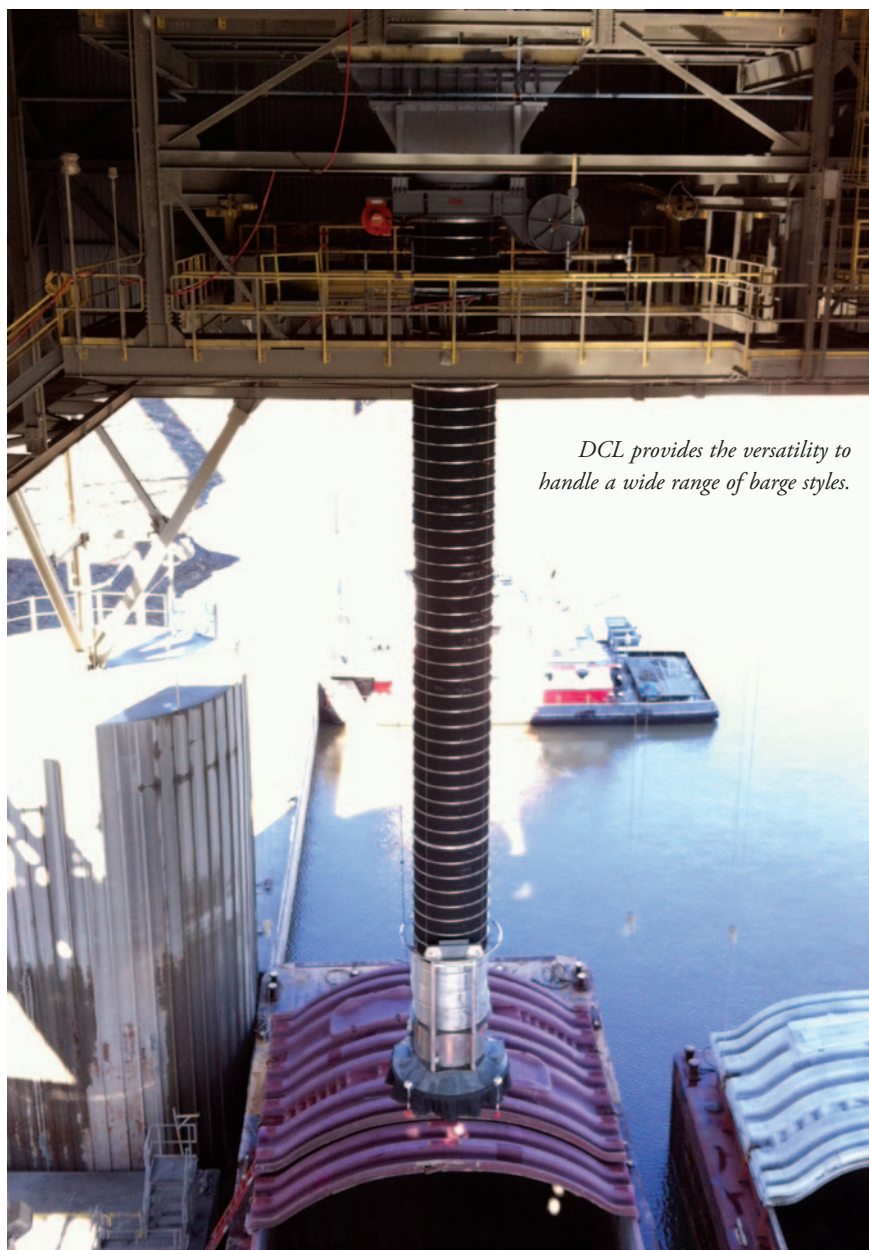
The spout also features a DeadFall dust suppressor — a specialized discharge attachment at the bottom of the loading spout. The DeadFall reduces product turbulence at the discharge point, effectively minimizing dust emissions during loading.

For handling extremely dusty materials like aerated cement, DCL created the 'H-style deadfall' discharge, a modification of the original deadfall design. The design of the H-style deadfall incorporates an inner slitted rubber skirt and an outer weighted barrier skirt, both attached to the discharge loading spout. This design enables velocity suppression, with the inner skirt containing material upon impact and the outer skirt providing secondary dust control to capture any material drifting from the spout.

The 'H-style deadfall' discharge is an ideal choice for open loading. It effectively minimizes dust emissions, ensuring a cleaner and safer working environment.

DCL'S SUCCESS IN THE US MARKET: ADVANCED LOAD-OUT SOLUTIONS FOR HOLCIM'S STE. GENEVIEVE FACILITY

DCL has established a strong foothold in the US market by providing advanced, tailored load-out solutions that meet the complex operational needs of large-scale



DCL provides the versatility to handle a wide range of barge styles.



The DCL OV58HD loading spout ensures clean, efficient barge loading.

facilities. One notable project took place at Holcim's Ste. Genevieve cement facility in Missouri. As one of the most advanced plants in the industry, Ste. Genevieve boasts an impressive production capacity and features its own Mississippi River port and barge loading facilities.

Holcim contracted DCL to evaluate and enhance the system requirements for its barge load-out area, ensuring that the setup could support their extensive operations along the river. DCL's expertise in bulk material handling and innovative load-out design helped optimize the facility's barge load-out capabilities and meet Holcim's high efficiency and environmental compliance standards.

HOLCIM SPECIFIED THE FOLLOWING CRITERIA FOR THE BARGE LOAD-OUT AREA:

- ❖ A load-out system that is capable of a 1,000tph loading rate of Type I cement for each of the four retractable loading spouts.
- ❖ Positioning capability for the four retractable loading spouts to accommodate various barge types.
- ❖ The loading spouts must be able to lower through the barge lid into the barge and maintain continuous contact with the product pile.
- ❖ The new barge load-out equipment must be EPA compliant, emit no visible dust emissions, and interface seamlessly with Holcim's existing

control system.

HOLCIM'S LOAD-OUT FACED SEVERAL SITE-SPECIFIC CHALLENGES:

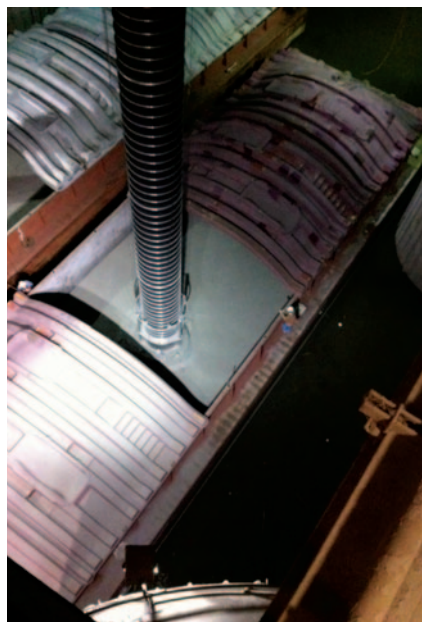
- ❖ Cement is highly aerated and inherently very dusty.
- ❖ At low water levels, there's a considerable drop from the fluidized conveyor to the loading spout discharge. When the river reaches its lowest point, the high volume of cement falls at high velocity, generating intense energy at the discharge point, resulting in substantial dust emissions.
- ❖ The equipment needed to be designed to accommodate 55-foot fluctuations in water level.

DCL'S CUSTOM LOADOUT SYSTEM FOR BARGE REQUIREMENTS

Upon returning to Michigan, the DCL team designed a customized loadout system tailored to meet the unique requirements of barge loading.

Key elements of this design included:

- ❖ **Fluidized conveyors (air slides):** DCL supplied short sections of fluidized conveying equipment to connect the existing conveyor system with the new DCL setup. The new fluidized conveyor included a hood with an adjustable blast gate for the venting of fluidized air into the dust collector.
- ❖ **Rotary positioners:** DCL designed loading spouts that could be lowered into barges without interfering with barge lids and could accommodate various barge styles. The vent-thru equipment was carefully engineered to control material velocity across its cross-sections, minimizing pressure loss and allowing released dust cake to fall through efficiently.
- ❖ **Dust collectors:** each loading point was equipped with a reverse pulse baghouse dust collector featuring a top-load design for easy maintenance. The dust collectors used Teflon-coated filter bags, providing excellent dust-shedding capability even in high-humidity conditions.
- ❖ **Retractable loading spouts:** DCL designed four OV58HD-85 retractable loading spouts for this project, one for each load-out. These spouts are built with a heavy-duty structural steel frame. Each spout offers 85 feet of vertical travel. A continuous cable system runs from one lifting pulley through a series of transfer sheaves to another pulley, ensuring the spout discharge remains level throughout its range.
- ❖ **Motor starter enclosures:** DCL provided control panels, one per load-out which simplified the equipment installation from an electrical standpoint. Starters and variable frequency drives for the motors and terminal strips for the I/O were included. With the addition of motor starters, Holcim only needed to provide a single-point power source for the high-voltage motors and label terminal strips to match the corresponding PLC I/O. Throughout commissioning, DCL collaborated closely with Holcim's electrical engineers to optimize the PLC programme, ensuring seamless integration and enhanced operational efficiency.



An 85-foot loading spout built to accommodate 55 feet of water height variability.⁸

DCL'S LARGEST SPOUT DESIGN AND ADVANCED LOADOUT SYSTEM FOR HOLCIM'S STE. GENEVIEVE FACILITY

For the Holcim Ste. Genevieve project, DCL designed one of its largest loading spouts to date, featuring an impressive 85 feet of vertical travel to meet the rigorous demands of open ship loading. The loadout system, engineered to handle cement at a capacity of 1,000tph, seamlessly fit into the existing mounting structure without adding weight, thus avoiding the need for structural modifications. Additionally, it met EPA standards by effectively minimizing dust emissions, aligning with strict environmental requirements.

DCL's advanced technology ensured smooth integration with the plant's control systems, allowing for efficient, dust-controlled loading that met all specified parameters.

Holcim's Ste. Genevieve facility exemplifies a forward-thinking approach to production, achieving impressive output while prioritizing environmental responsibility.

For decades, DCL has refined four key features that drive greater efficiency in loading operations.

DCL'S TRAJECTORY STUDIES: MINIMIZING DUST AND MATERIAL LOSS IN LOADOUT SYSTEMS

When configuring a loadout system, DCL conducts a detailed trajectory study to ensure optimal performance. This study carefully examines the speed and weight of the product flow as it enters the head chute and transitions into the product inlet. Based on these calculations, DCL may

install a deflector shield at the end of the chute, if necessary, to redirect the product back into the inlet, minimizing material loss and enhancing efficiency.

LEVEL-SENSING TECHNOLOGY

DCL's heavy-duty loading spouts are equipped with advanced level-sensing technology that monitors the product pile height in real-time. As the pile grows, these probes automatically signal the spout to adjust its height, ensuring an optimal loading distance while preventing overflow and spillage.

DCL TILT PROBES: RELIABLE HEIGHT DETECTION IN MATERIAL LOADING

The DCL Tilt Probe is a durable and reliable tool engineered to monitor height levels in material loading piles. This straightforward yet highly effective solution helps optimize bulk material flow management. Mounted on the exterior of the skirt, the probe activates when tilted beyond 15°, sending a signal to the PLC to adjust the spout to a different location within the container, barge or ship, ensuring efficient and even loading.

PNEUMATIC LEVEL SENSOR

Although not designed for ships or barges, the pneumatic level sensor is ideal for auto-level load sensing. It operates using an air supply suppressor: as the material rises, it exerts pressure on the tube, triggering a signal to the controls. When the air pressure reaches a preset threshold, the spout adjusts its position accordingly.

DCL's heavy-duty loading spouts with level-sensing technology offer a powerful solution for bulk material handlers looking to streamline their processes, reduce labour needs, and increase operational safety.

CONCLUSION

Combining decades of industry expertise with cutting-edge technological innovations, DCL is an ideal choice for designing loadout systems. Its in-house team of skilled designers and engineers collaborates closely with customers to develop a loadout solution tailored to their exact specifications, ensuring it meets all operational needs.

DCL is committed to providing reliable, efficient, and precise systems. Its team is ready to bring its customers' visions to life with a custom-built loadout that enhances productivity and safety. It can design a loadout solution that optimizes its customers' operations and meets their unique requirements.

Accuracy in conveyor weighing

setting the standard with Tru-Trac



Tru-Trac Belt Scales installed in harsh industrial conditions, demonstrating their durability and reliability.

The accurate measurement of bulk materials is essential across industries like mining, processing plants and aggregate handling. Tru-Trac's Belt Scale Systems are at the forefront of delivering innovative technology that ensures precise and reliable measurements, setting new benchmarks in conveyor belt efficiency and operational control.

In industries reliant on efficient material handling, maintaining precise weighing systems is paramount for optimizing production processes and managing inventory effectively. Tru-Trac Belt Scale Systems offer unparalleled accuracy and reliability, even in challenging environments. They provide crucial data for informed decision-making and operational streamlining.

Traditional belt scales often struggle in harsh industrial settings, where conditions can lead to inaccuracies and frequent

recalibrations. Tru-Trac's advanced belt scale systems overcome these challenges by integrating state-of-the-art technology with robust design principles, ensuring consistent performance and precision.

A key component to Tru-Trac's Belt Scale Systems are high-precision load cells that deliver accurate measurements essential for effective material handling. These systems feature innovative digitization located close to the load cells and carriage, eliminating the need for traditional junction boxes. This design enhances signal integrity, ensuring precise data transmission and reliable weighing results critical for optimal operational control.

Tinus Ludik, BMH Sales Manager at Tru-Trac, highlights the system's design advantages: "Our belt scales leverage advanced digitization to maintain high signal integrity and accuracy, minimizing errors

and delivering consistent, precise measurements crucial for efficient material handling."

Tru-Trac's Belt Scales are engineered for seamless integration into both new and existing conveyor systems. Their flexibility allows them to meet diverse operational requirements, from single conveyor installations to complex multi-scale setups. The user-friendly human-machine interface (HMI) with a touch screen provides intuitive controls, making the system accessible even in harsh industrial conditions.

The belt scales support multiple communication protocols through various integrators, ensuring compatibility with different control systems. This flexibility simplifies integration and facilitates efficient data management, enhancing overall system efficiency and reliability.

An optional feature of Tru-Trac's Belt

Scale Systems is the Remote Monitoring System (RMS) offering real-time access to operational data and remote calibration capabilities. This system minimizes the need for on-site maintenance, allowing users to monitor their systems from any networked device. “Our RMS provides real-time data access and remote calibration, reducing maintenance needs and offering continuous operational oversight,” Ludik says.

At a major aggregate handling facility, Tru-Trac’s Belt Scale System delivered transformative results. Faced with accuracy and reliability challenges in their existing systems, the facility experienced operational inefficiencies and increased costs. Tru-Trac’s advanced system featuring high-precision load cells and enhanced digitization provided accurate reliable measurements, improving inventory management and production control.

Ludik says that implementing the Tru-Trac Belt Scale System at the aggregate facility demonstrated its effectiveness in providing precise measurements, even in challenging environments. The accurate data optimized production processes and reduced operational inefficiencies.

“The aggregate facility witnessed significant improvements in weighing accuracy and operational efficiency. Our technology proved capable of handling demanding conditions while delivering the precision needed to enhance performance,” he says.

Tru-Trac’s capabilities extend beyond accurate weighing to include comprehensive conveyor solutions such as belt cleaners and impact and spillage control around loading zones. These systems integrate seamlessly with Tru-Trac’s Belt Scale Systems, ensuring cohesive management of material handling processes and reducing material loss.

By combining Tru-Trac’s belt scales with Rip Detection and Metal Detector solutions, operators achieve a streamlined material handling process, minimizing maintenance and optimizing performance.

Tru-Trac’s Belt Scale Systems represent a breakthrough in conveyor weighing technology, offering high-precision load cells, advanced digitization, and real-time monitoring capabilities. These systems deliver the accuracy and reliability needed for efficient bulk material handling, making them ideal for both new installations and retrofits. **DCi**



Tru-Trac Belt Scale Systems deliver innovative technology for precise and reliable measurements.



Tru-Trac engineers performing regular calibration on belt scales to ensure optimal accuracy and performance.



Tru-Trac’s skilled team installing a belt scale system, ensuring precise setup for optimal accuracy and performance.

Custom chutes show their mettle

with abrasive ore



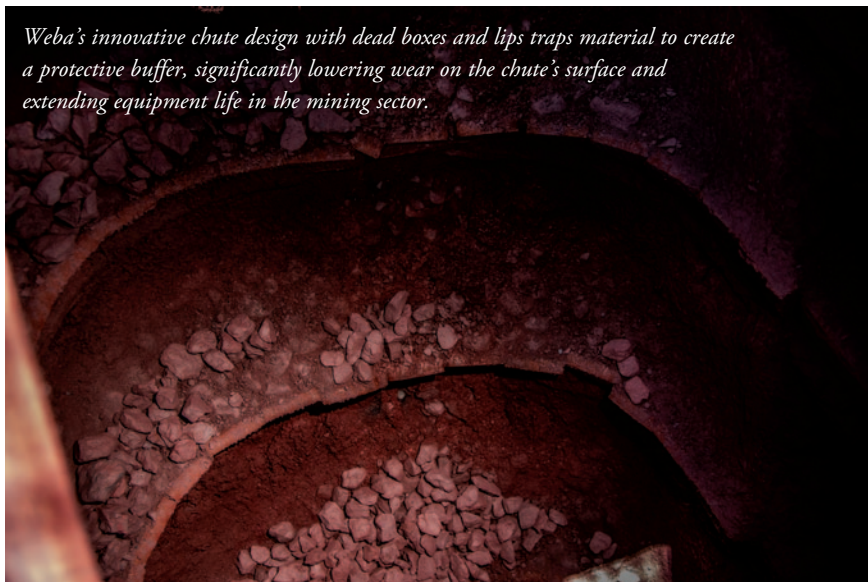
Designed for demanding environments, Weba Chute Systems' conveyor belt setup feeds directly into a high performance transfer chute, enhancing throughput and protecting equipment from costly downtime.

With most of its 5,000-strong global footprint of transfer chutes being installed in Southern Africa, Johannesburg-based Weba Chute Systems has built a reputation in demanding mining conditions.

The region is a leading producer of platinum and manganese, for instance, which are both highly abrasive ores, points out Dewald Tintinger, Technical Manager at Weba Chute Systems. The company's innovative approach and customized designs control material flow and resist wear, matching specific site conditions.

"First and foremost, a chute must facilitate optimal throughput so that mining production is not hampered by frequent blockages or repairs," says Tintinger. "It is well known that the cost of a quality chute

Weba's innovative chute design with dead boxes and lips traps material to create a protective buffer, significantly lowering wear on the chute's surface and extending equipment life in the mining sector.



Conveyor belts channel ore smoothly into a custom-designed Weba Chute ensuring controlled flow and minimal wear in abrasive conditions typical of Southern Africa's mining operations.

is a fraction of the cost of lost production through downtime.”

He highlights that Weba Chute Systems takes a systematic approach to assessing each customer's requirements, starting with the general arrangement of the area around transfer points. The depth of experience accumulated over 40 years in business allows the company's experts to suggest improvements to the layout — where these are possible and where they affect the chute performance.

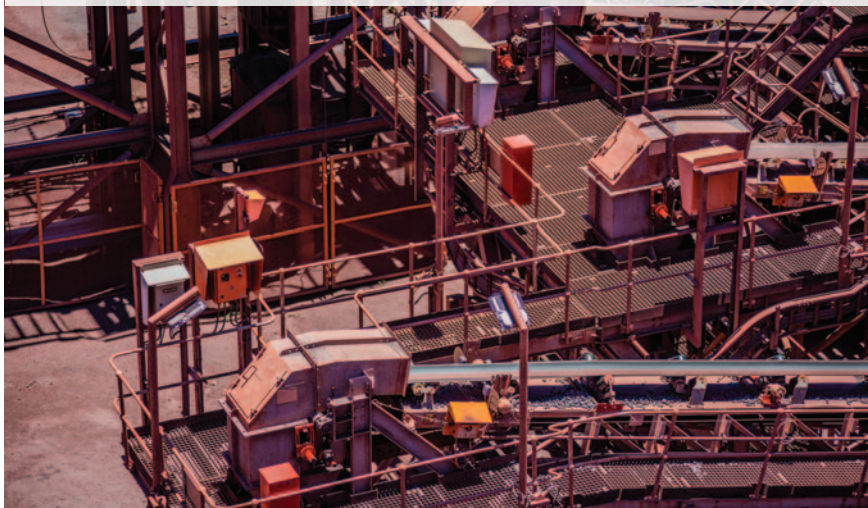
“Then we consider a range of key factors like the material characteristics, the throughput tonnages and speed of travel, when we plan the design,” he says. “These considerations guide the application of our controlled flow philosophy.”

The design is built on scientific calculations using the anticipated trajectories, impacts and pressures on the structure. The main conceptual options are Weba's Cascade Chute with dead boxes, the Weba Superflow chute with liners or a combination of both.

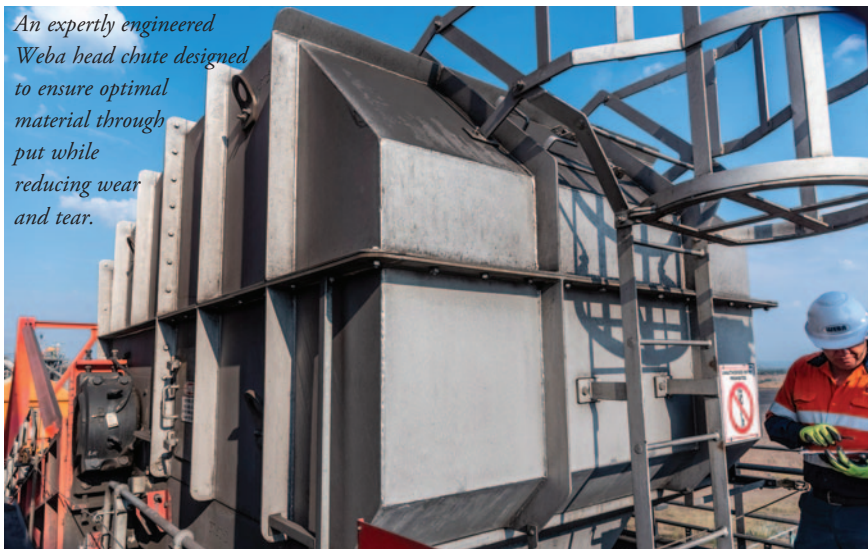
“A key element of our popular Cascade Chute is the use of dead boxes and lips on the inside of the structure, which traps material and allows other material to flow over it,” says Tintinger. “This ensures that up to 70% of the wear surface is protected by stationery material, which substantially reduces wear and maintenance costs while extending service intervals.”

As material enters the chute and flows through, it lands mainly on other material which absorbs the impact more effectively, protecting the underlying wear plates and structure from undue damage. This also reduces dust creation, he notes, which is an ongoing health and safety concern on mines.

A Weba Chute Systems head chute, engineered to handle abrasive materials, reduce maintenance and extend service intervals with controlled material flow, in operation.



An expertly engineered Weba head chute designed to ensure optimal material throughput while reducing wear and tear.



“Controlling material flow through the right chute design also protects costly equipment like conveyor belts,” he says. In one example, Weba Chute Systems installed a cascade chute at a Southern

African copper mine to better control the flow of material onto conveyor belts. This saved immediately on belt costs — while boosting productivity through improved uptime.

DCi

In Serbia, KOCH Solutions secured a high-profile contract for the MB Kolubara mine, which includes two bucket wheel excavators.

Kompetente Technik

German Engineering Expertise

Jay Venter

KOCH Solutions: pioneering dry bulk handling solutions

KOCH Solutions GmbH continues to set the standard in engineering excellence, delivering innovative solutions for dry bulk commodity handling across the globe. With decades of experience and a commitment to quality, the company has solidified its reputation as a leader in the design, manufacture, and implementation of cutting-edge equipment for industries ranging from mining to port logistics.

By focusing on technological advancements and sustainable practices, KOCH Solutions addresses the evolving needs of the bulk commodity sector. The company's expertise spans a wide array of services, ensuring reliability and efficiency in handling materials like coal, iron ore, and other dry bulk commodities.

RECENT SUCCESS STORIES: ENGINEERING EXCELLENCE IN ACTION

One of KOCH Solutions' recent milestones was the successful delivery and installation of a new boom head for the LKAB shiploader in Norway. This critical component, with dimensions of 13.45 x 8.31 x 5.08 metres and weighing 31.5 tonnes, was transported from Poland to Norway via ship and installed directly upon arrival. The seamless execution of this

project highlights KOCH Solutions' ability to manage complex international logistics while adhering to tight timelines.

Similarly, the Sulut project demonstrated the company's resilience and problem-solving capabilities. This venture involved delivering two continuous ship unloaders (CSUs) and a bucketwheel stacker reclaimer (BWSR) to a remote site under challenging conditions. Navigating the constraints of the Covid-19 pandemic, local manufacturing requirements, and a demanding end client, KOCH Solutions successfully handed over the equipment, reinforcing the importance of teamwork and detailed planning.

These projects exemplify the company's dedication to delivering not just equipment but holistic solutions tailored to specific operational challenges.

EXPANDING GLOBAL PRESENCE: NEW FRONTIERS IN AFRICA AND EUROPE

KOCH Solutions is steadily expanding its footprint worldwide, a testament to its adaptability and client-centric approach. In South Africa, the company's regional branch achieved a significant milestone by securing its first two major orders from clients Nacala Spares and Assmang. This

achievement reflects the growing confidence in KOCH Solutions' expertise and the dedication of its local team to meeting regional demands.

In Europe, KOCH Solutions showcased its logistical expertise with the delivery of nine modular components of a stacker from China to Linz, Austria. These modules were transported by inland waterways to Antwerp and then trucked to the assembly site in Austria. The intact and punctual delivery enabled the assembly phase to commence without delays, underscoring the importance of meticulous planning and collaboration across continents.

Such projects not only demonstrate KOCH Solutions' operational capabilities but also highlight its role as a reliable partner for industries requiring precision and efficiency in bulk material handling.

ADVANCING MINING SOLUTIONS: LEADING THE WAY IN SERBIA

KOCH Solutions continues to strengthen its position as a premier supplier of mining equipment. In Serbia, the company secured a high-profile contract for the MB Kolubara mine, which includes two bucket wheel excavators of the 740L type and



KOCH Solutions' Sulut project involved delivering two continuous ship unloaders (CSUs) and a bucket-wheel stacker reclaimer (BWSR) to a remote site under challenging conditions.

two belt wagon/spreaders of the 1600(28+50) type. This substantial order reaffirms the company's role as a successor to major mining OEMs, continuing their legacy with state-of-the-art solutions.

These machines are designed to meet the demanding requirements of modern mining operations, combining durability with innovative technology to optimize efficiency. By collaborating with local partners like Roaming Networks and GOŠA MONTAŽA, KOCH Solutions ensures that its projects are executed seamlessly, even in the most challenging environments.

INNOVATIVE EDGE: STAYING AHEAD IN A COMPETITIVE MARKET

KOCH Solutions owes its market leadership to its relentless pursuit of innovation and client satisfaction. The company's product portfolio includes advanced equipment designed to handle a variety of bulk commodities, ranging from minerals to agricultural products. By integrating automation and digital monitoring into its systems, KOCH Solutions enables clients to enhance

operational efficiency and reduce downtime.

Sustainability is another cornerstone of the company's philosophy. By optimizing equipment designs to reduce energy consumption and implementing environmentally friendly manufacturing practices, KOCH Solutions aligns with global efforts to minimize environmental impact. This focus not only benefits clients by lowering operational costs but also reinforces the company's commitment to a greener future.

In addition to technological advancements, KOCH Solutions maintains a strong emphasis on building long-term client relationships. The company works closely with customers to tailor solutions that meet specific requirements, ensuring that every project aligns with operational goals and industry standards.

LOOKING TO THE FUTURE: CHALLENGES AND OPPORTUNITIES

As the demand for efficient dry bulk handling continues to grow, KOCH Solutions is poised to lead the industry with its forward-thinking approach. The

company's global reach, combined with its dedication to innovation and sustainability, positions it as a key player in shaping the future of bulk commodity handling.

With a proven track record of success in diverse projects, KOCH Solutions is committed to exploring new technologies that improve operational efficiency while maintaining the highest standards of safety and reliability. This includes advancements in digitalization, where smart systems and real-time monitoring play an increasingly important role in optimizing equipment performance.

By fostering strong partnerships and investing in research and development, KOCH Solutions ensures that it remains at the forefront of the industry. The company's ability to adapt to new challenges, whether they involve logistics, client demands, or environmental considerations, sets it apart as a leader in the field.

For those looking to learn more about KOCH Solutions' innovative projects and contributions to the dry bulk handling sector, there are more details on the company's website.



Performance delivered

Groundbreaking Solutions

KOCH Solutions stands at the vanguard of material handling, driving progress with over three centuries of combined expertise and a global portfolio boasting 10,000 projects. At KOCH Solutions, we are redefining material handling excellence with our advanced stockyard systems. Meticulously engineered to cater to the dynamic demands of high-capacity operations, our solutions stand out for their modular innovation and seamless integration into existing workflows. Crafted from a blend of tried-and-tested components, each system we devise is a testament to our commitment to tailor-made efficiency. We don't just provide equipment; we deliver comprehensive, turnkey solutions that resonate with your unique specifications, ensuring operational effectiveness paired with economical investment and operating costs. Our ethos is to forge a path of progress in material handling that aligns with your vision of growth and efficiency.

Comprehensive Planning | Precision Manufacturing | Streamlined Delivery | Dedicated Service

Before all else fails: replacement for conveyor belt switches in case of delivery failures

When conveyor belt systems are used in mining, recycling applications, or other diverse industries, safety is a top priority. Conveyor belt systems in harsh environments often experience increased material wear with process-specific problems that can lead to belt misalignment or damage, and sometimes even malfunctions or system failures. The risk to personnel or conveyed goods is particularly high if the monitoring technology fails unexpectedly. The further economic consequences of an interruption in internal logistics are obvious.

Special position switches to protect against belt misalignment or pull-wire emergency switches have long been part of the repertoire of all monitoring devices to alert to dangers in advance and to trigger the belt shutdown in time. This aspect of maintaining safe plant operation is fulfilled as long as the monitoring devices perform their duties. In the event of failures, either suitable replacement switches are available, or the regular supplier has replacements in stock. Ideally, the manufacturer itself ensures professional replacement as part of a routine service programme.

However, if certain switch programmes are discontinued by the manufacturer, conveyor operators find themselves in an unexpected predicament. They are forced to find suitable replacements promptly — ideally including technical service support.

A current example: according to its own statements, Thermo Fisher Scientific removed the Ramsey conveyor belt pull-wire emergency switches from its delivery programme in mid-2023. Conveyor systems that use Ramsey™ pull-wire emergency switches now require adequate replacements. As a plant operator, one naturally wants to avoid costly adjustments and major new investments in existing belt conveyors.

Kiepe Electric GmbH from Düsseldorf has adapted to the current situation and supplies suitable replacements that meet both the specific equipment and construction requirements. Replacement can be carried out quickly, as modern quick-release systems save up to 50% of installation time and assembly paths.

Recently, the legal environment for industrial plants in the USA has changed: new regulations only allow the operation of conveyor belt systems if they are flanked by simple distance devices or ideally enclosed to protect operators and



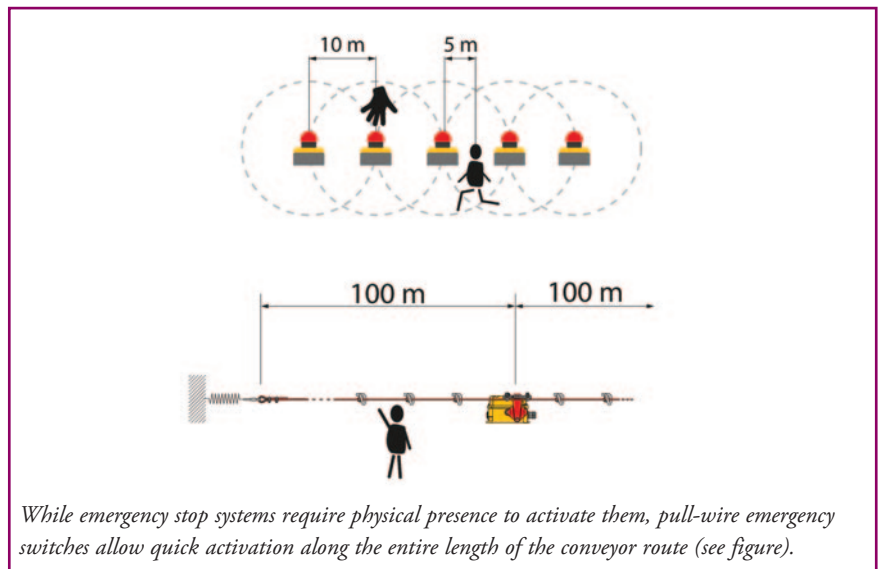
Pull-rope emergency switches provide the necessary safety for service and maintenance personnel along the entire conveyor route.

maintenance personnel. However, these only offer rudimentary protection and are not sufficient to completely eliminate the risk of potential accidents due to entrapment. This is especially true during maintenance work, when safety distances cannot be maintained, simple distance devices prove to be inadequate, and the risk of accidents increases. While emergency stop systems require physical presence to activate them, pull-wire emergency switches allow quick activation along the entire length of the conveyor route (see figure below).

For safety-relevant components, high material and processing quality are crucial. Depending on the application area, Kiepe uses high-quality materials for cases made of aluminum, plastic, or cast iron with stainless steel components.

Thanks to the expertise of the traditional company, products from other manufacturers can usually be easily replaced with functionally equivalent counterparts. Additionally, Kiepe products offer a range of additional features, such as misalignment switches with adjustable switching angles.

Since the 1960s, the manufacturer has been developing and distributing electrical equipment for monitoring and controlling conveyor belt systems — an estimated 80,000km of belt conveyors have been equipped with Kiepe products worldwide. The company offers both standardized and custom-made conveyor belt protection switches for various applications. These include pull-wire emergency switches, belt misalignment switch, and pull rope installation systems.



While emergency stop systems require physical presence to activate them, pull-wire emergency switches allow quick activation along the entire length of the conveyor route (see figure).

Sea terminal increases productivity with help from its Sennebogen 895 E



In November 2023, the Sennebogen 895 E was delivered to the Gateway Terminal in Connecticut, USA — an important milestone for the Gateway Terminal, a renowned bulk cargo handling company that has been operating as the only independent marine terminal in the state of Connecticut since 1985. The Sennebogen 895 E will handle the loading of scrap as well as HMs (Heavy Melting Steel) and PNS (Plate and Structural Steel) into cargo ships for the metal recycling company Sims Metal.

Gateway Terminal is part of the Enstructure Group, which is responsible for the operation of 21 terminals, including three in Connecticut. The terminal has made a name for itself in both the dry and liquid bulk segments and is now one of the most efficient and economical terminal operators in the northeastern United States. In order to meet the increasing demands and further increase operational efficiency, Gateway Terminal decided to purchase the Sennebogen 895 E, which is considered the largest material handler in

The SENNEBOGEN 895 E loading scrap onto a ship.





The SENNEBOGEN 895 E in the harbour of New Haven, Connecticut.

the world with an operating weight of 420 tons and a reach of 40 meters.

CUSTOMIZED PORTAL SIZE FOR OPTIMAL LOADING PROCESSES

A key factor in choosing the Sennebogen 895 E was the need to replace the previous cable crane. Tyler Equipment Corporation, as the responsible dealer, helped to find the right replacement. The specific requirements of the port called for a material handler that was not only powerful, but also flexible and low-maintenance. The Sennebogen 895 E impressed with its unique gantry size, which is perfectly matched to the terminal's loading processes. It also turned out that the newly designed, lighter skip pans require

less maintenance than originally expected.

EFFICIENT, LOW-MAINTENANCE AND USER-FRIENDLY

The harsh environment in the northeast of the USA places special demands on the machines used. The Sennebogen 895 E Electric offers decisive advantages here:

- ❖ **Easy start and operation:** whereas previously the machines had to be preheated at 4am, the operators of the Sennebogen 895 E can now get straight in and start work. This shortens the start time by an hour and reduces the workload for the employees.
- ❖ **More efficient cycle times:** with cycle times of less than one minute, the

895 E enables faster loading processes, which significantly increases the overall productivity of the terminal.

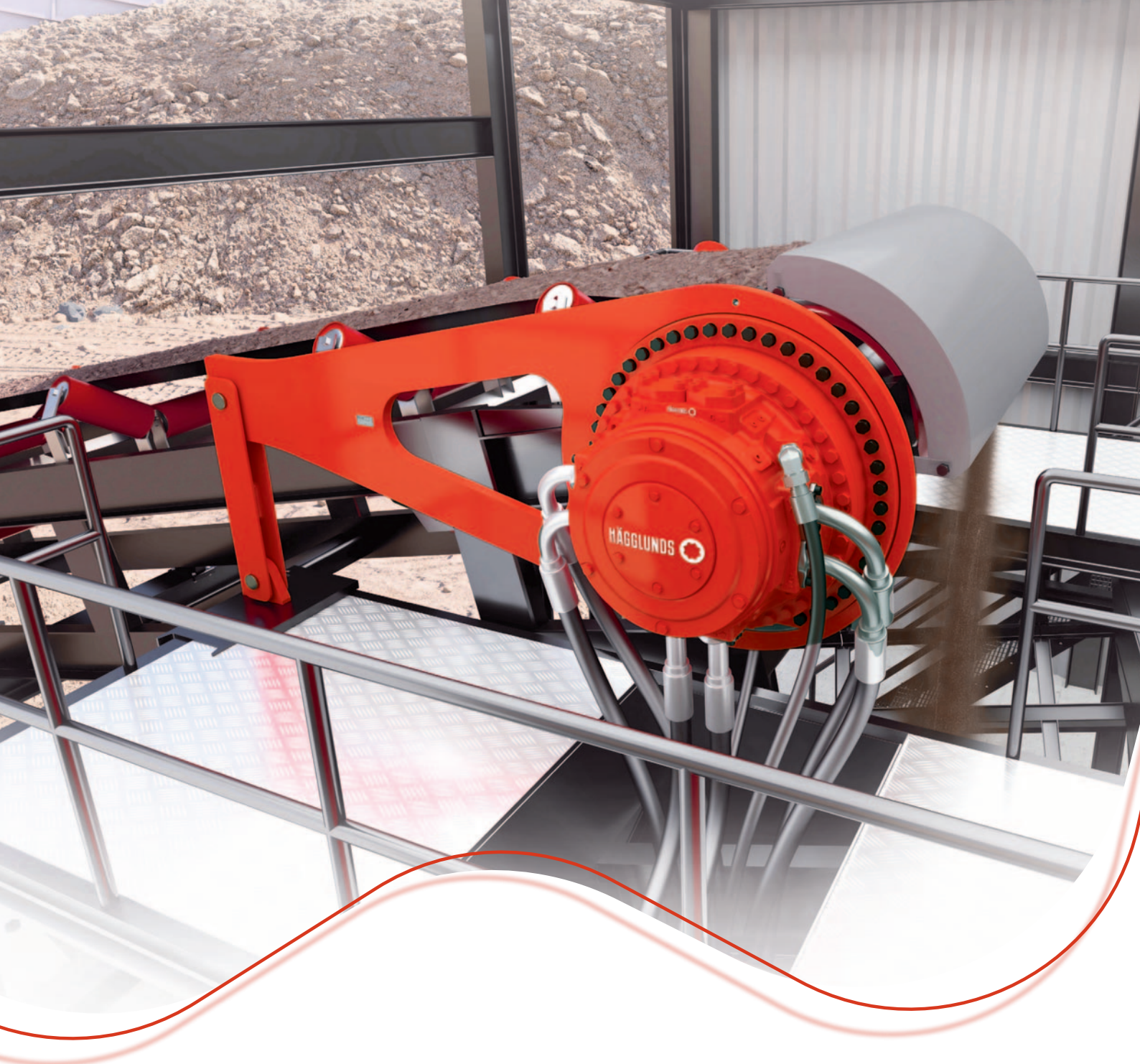
- ❖ **Lower maintenance costs:** the special skip pans, which are lighter than the original ones, have proven to be extremely low-maintenance, resulting in further cost savings.
- ❖ **Ergonomics and ease of use:** the operators appreciate the safe working procedures from the cab, which provide a better view of the ground staff and therefore better communication.
- ❖ **Customer-specific adaptations:** due to the limited space available at the finger pier, Sennebogen provided a customized undercarriage that exactly met the dock's specifications.
- ❖ **Green hybrid:** with the proven Green Hybrid energy recovery system, the energy required and therefore the operating costs can be reduced by up to 50%.

A PROVEN CHOICE FOR THE PORT

Replacing the cable crane with a modern material handler quickly proved to be the right decision due to the positive experience and efficiency of the machine. The choice for the Sennebogen 895 E has proven to be a complete success and will help Gateway Terminal in Connecticut to further expand its leading position in bulk handling. The combination of technical innovation, cost efficiency and ease of use makes the Sennebogen 895 E an optimal choice for demanding loading processes.



A size comparison of the newly designed skip pan.



Bend the laws of size, strength and speed.

In mining and materials handling, the Häggglunds Quantum Power motor reshapes reality with shared DNA. Adding a slim new connection block to the proven Häggglunds Quantum, it opens up an unthinkable space – stretching to 170 rpm while retaining full torque capacity at high efficiency. For belt conveyors, crushers, sizers, surface miners and more, it's time to enter the Quantum domain: www.hagglunds.com/quantum

Häggglunds is a brand of Rexroth.
www.hagglunds.com

HÄGGLUNDS 

SENNEBOGEN: "We Are Green – sustainability as the core of our DNA"



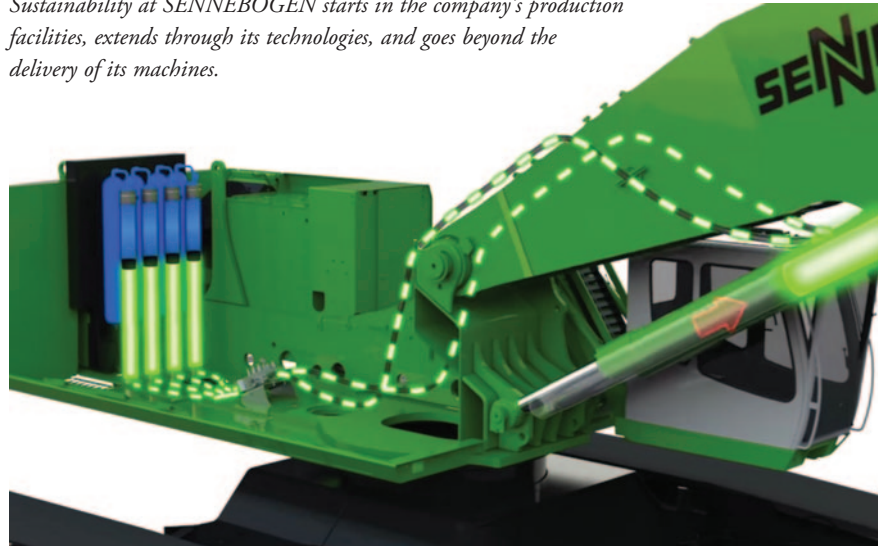
Sustainability is not just a trend – for SENNEBOGEN, it is a fundamental principle deeply rooted in the company's corporate philosophy. With clear goals and innovative technologies, SENNEBOGEN aims to achieve climate neutrality by 2030. This ambitious target will be realized through creative ideas, ecological responsibility, and its commitment to long-term thinking. SENNEBOGEN's philosophy is reflected in bold decisions: It invests in forward-looking innovations, even when its economic success only becomes apparent years later. "We Are Green" is not just a slogan but an expression of the company's conviction.

Sustainability at SENNEBOGEN starts in the company's production facilities, extends through its technologies, and goes beyond the delivery of its machines. Its focus is on the holistic reduction of direct and indirect emissions. Significant steps have already been taken to sustainably reduce the company's ecological footprint.

ENERGY-EFFICIENT PRODUCTION FACILITIES

SENNEBOGEN's production processes are designed for maximum efficiency. All sites are equipped with photovoltaic systems that cover an increasing portion of its energy requirements and feed surplus energy into the grid. Biomass heating systems in its plants replace fossil fuels and contribute to CO₂ reduction. Energy-efficient underfloor heating and geothermal systems further optimize heating and cooling processes. Even its internal logistics are becoming greener: an expanding fleet of fully electric factory

Sustainability at SENNEBOGEN starts in the company's production facilities, extends through its technologies, and goes beyond the delivery of its machines.



vehicles and the development of charging infrastructure underline the company's commitment.

TECHNOLOGIES THAT MAKE A DIFFERENCE

SENNEBOGEN's machines play a key role in ecological transformation. The company equips them with innovative solutions and drive systems that significantly reduce energy consumption and operating costs, depending on the technology and application.

E GREE— ELECTRIC PORT MACHINES

SENNEBOGEN's port machines are optionally equipped with powerful electric motors that combine efficiency and sustainability. This technology improves efficiency by up to 30% and reduces energy costs by up to 50% – completely emission-free.

To address the diverse requirements of ports without continuous power supply, SENNEBOGEN offers flexible solutions, such as:

- ❖ **Emergency lifting units** that ensure safe operation even in the event of power, motor or pump failure.
- ❖ The **Powerpack SP100**, which ensures full mobility and enables machine use at various port locations.
- ❖ The **Full Operation Powerpack**, which allows continuous operation of the machine without electrical supply, combining two independent drive concepts for maximum flexibility.

GREEN HYBRID — INNOVATION WITH ENERGY RECOVERY

SENNEBOGEN's unique energy recovery system combines hydraulic cylinders on the boom with nitrogen accumulators in



the machine's back section. During the lowering of the boom, the gas in the nitrogen accumulator is compressed and supports the subsequent lifting process. This technology can reduce operating costs by up to 30%. The large piston accumulator volume ensures constant force while extending component lifespan — an industry-exclusive feature.

EQ BALANCER — ALWAYS IN BALANCE

SENNEBOGEN's balance material handlers set new benchmarks in efficiency. This is achieved through the directly linked counterweight, which optimally balances loads. As a result, balance material handlers require only 50% of the installed power compared to conventional machines. When combined with electric drives, operating costs can be reduced by up to 75% compared to standard material handlers.

HVO — FUTURE-READY FUEL

SENNEBOGEN machines are compatible with Hydrotreated Vegetable Oil (HVO), a renewable fuel that reduces greenhouse gas emissions by up to 90%. HVO burns cleanly, minimizes particulate matter, and improves air quality — all without requiring modifications to the machines.

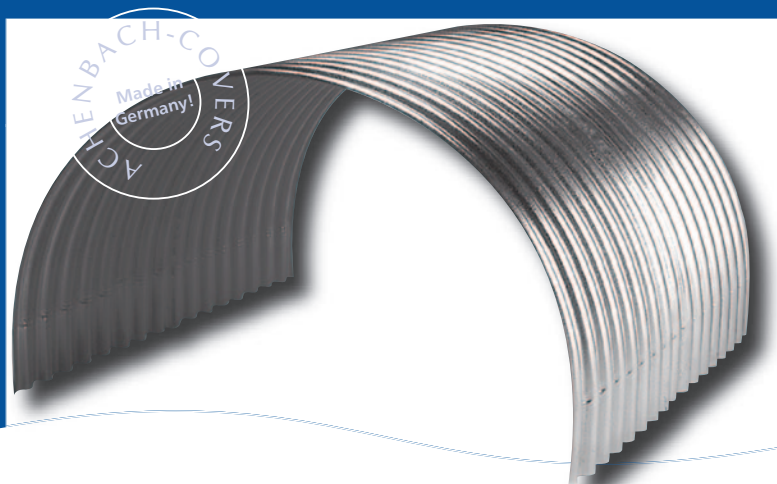
FULL-LINER — SUSTAINABLE SOLUTIONS FOR EVERY REQUIREMENT

As the only provider in the bulk and general cargo handling industry, SENNEBOGEN combines a comprehensive portfolio of hydraulic and balance material handlers as well as mobile harbour cranes. This broad range enables SENNEBOGEN to offer the optimal technological solution for every customer's individual requirements. Whether it's resource-efficient processes, energy savings, or CO₂ reduction, the company works together with its customers to develop economically efficient and environmentally friendly applications.

SENNEBOGEN represents sustainable transformation that extends beyond technological innovations. From its production facilities and internal logistics to the

performance of its machines, the company's goal is clear: a green future. SENNEBOGEN thinks long-term, acts responsibly, and actively-drives change forward.

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Italian steel handling specialist Transped boosts efficiency with upgrade to Konecranes Gottwald ESP.7 mobile harbour crane

Longstanding Konecranes customer Transped S.p.A. has ordered a Konecranes Gottwald Generation 6 mobile harbour crane to expand its handling capacity and efficiency at Italy's Venezia-Marghera port. The order was booked in Q4 2024 and will be delivered during Q2 2025.

Transped is part of the Italian FHP Group, the leading national port operator in the bulk sector handling about 10mt (million tonnes) of cargo per year. Transped has more than four decades of specialized steel handling experience at Venezia-Marghera, a major hub for northern Italy's manufacturing industries. Having had a Generation 5 mobile harbor crane in reliable operation for many years, Transped has now opted to upgrade to the crane's natural successor: the Generation 6 Konecranes Gottwald ESP.7 mobile harbour crane.

With its working radius of 51 metres and maximum lifting capacity of 125 tonnes, the new crane can handle heavier weights than its predecessor when working at the same range. This improvement allows Transped to work with a wider range of steel load types without needing to reposition the crane. Konecranes has also configured specialized load curves for Transped that enable different magnets to be used for the safe and efficient handling of any kind of steel products.

"Transped handles more than two million tonnes of steel each year, so we need equipment that ensures precision, stability and high lifting capacity over long periods. With its extended working radius, this latest generation Konecranes Gottwald mobile harbour crane will significantly enhance our efficiency across different types of steel cargo," says Mauro Marchiori, Executive Director of Venice Terminals di Venezia at Transped.

The Konecranes Gottwald ESP.7 mobile harbour crane is designed with a higher crane classification that supports a longer service life — potentially up to double that of its predecessor for some applications. Transped has opted to equip the mobile harbor crane with an eco-efficient Konecranes hybrid drive.

The technology uses ultracapacitors to store energy generated from braking and release it again when needed. By reducing the use of the onboard diesel engine, the ultracapacitors decrease fuel consumption and operational emissions.



"Konecranes has a long history with Transped and they have seen how our mobile harbour cranes consistently perform at a high level. The ESP.7 crane combines the versatility and power that Transped needs for specialized steel handling in the industrial port environment," says Gino Gherri, Regional Sales Manager at Konecranes.

POWERED BY ECOLIFTING

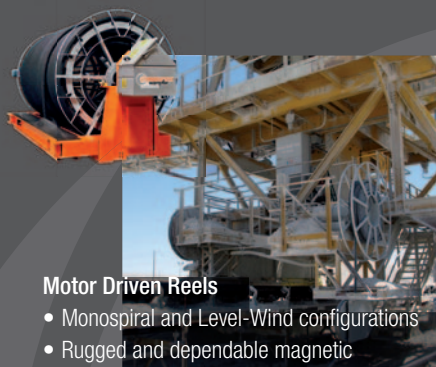
This contract is part of Ecolifting™, Konecranes' vision to increase its handprint — meaning the beneficial environmental impact that can be achieved with our product and service portfolio — while reducing customers' carbon footprints. From eco-optimizing diesel drives, to hybridization and fully-electrified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

A strong focus on customers and commitment to business growth and

continuous improvement make Konecranes a material handling industry leader. This is underpinned by investments in digitalization and technology, plus our work to make material flows more efficient with solutions that decarbonize the economy and advance circularity and safety.

ABOUT KONECRANES

Konecranes is a global expert in material handling solutions, serving a broad range of customers across multiple industries. It consistently sets the industry benchmark, from everyday improvements to the breakthroughs at moments that matter most, because it knows it can always find a safer, more productive and sustainable way. That's why, with around 16,700 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 billion.



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- Monospiral and Level-Wind configurations
- Rugged and dependable magnetic coupler for dusty environments



Cable Festoon

- Corrosion-resistant, long-life rollers; precision sealed bearings
- Systems customized for the application
- Preassembled option, for easy installation



Slip Rings

- Allow infinite rotation
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TAKRAF Group – an icon of German engineering

Delivery of a dumper cage and part of TAKRAF's Tandem Rotary Railcar Dumper for installation at a Canadian bulk terminal expansion project.



Serving the global mining and associated industries, TAKRAF Group delivers sustainable solutions that lower the total cost of ownership, add long-term value and reduce environmental impact.

The year 2025 will be a momentous one for TAKRAF Group (TAKRAF) as it celebrates its 300th year in its long and rich evolution from a small iron manufacturer in Lauchhammer, Germany, to the global engineering powerhouse it is today. TAKRAF's key strategic pillars of innovation and sustainability are deeply rooted in its history, from commissioning the first blast furnace in 1725 to its current pioneering contributions to energy transition and safe, sustainable and low environmental impact operations.

Respected globally as a leading supplier of technologies, systems and equipment to the mining and related industries, TAKRAF's bulk material handling and minerals processing expertise is focused on meeting its client's operational requirements, while cutting emissions and waste, optimizing resources and saving energy.

With sustainability comprising the core of TAKRAF's corporate culture, the group published its first sustainability report in voluntary compliance with the EU's European Sustainability Reporting Standards (ESRS) under the Corporate Sustainability Reporting Directive (CSRD). It thus became one of the first companies in Europe to do so. The report covers the impact of TAKRAF's operations, products and services on greenhouse gas emissions, pollution, water and resource use, circular economy and waste, as well as the group's policies and actions regarding social responsibility, governance and compliance.

GLOBAL PROJECTS

Throughout its three-century long history, TAKRAF has focused on addressing the evolving fundamental challenges that face the industries it serves, based on its trust in the power of technology, combined with its wealth of engineering expertise.

TAKRAF's project portfolio continues to include many of the industry's foremost projects. In Africa, for example, TAKRAF was awarded a major contract from

Societe Nationale Industrielle et Minière (SNIM) for a project that is crucial to the economy of Mauritania. The contract covers supply of a complete iron ore crushing, screening and material handling system, along with a train loading station, for the F'Derick project. TAKRAF's longstanding partnership with SNIM, dating back to the early 2000s, demonstrates the client's confidence in TAKRAF's reliability, technology, project implementation and service-oriented approach.

Also in Africa, TAKRAF participated in a backfilling project that was not only crucial to the mine's efficient production and waste disposal activities, but also to it achieving its environmental stewardship commitments by minimizing its impact on the surrounding area. The group provided design, engineering and construction support services for this major backfill project in South Africa, which included a new extendable conveyor complete with auxiliary infrastructure. The structural design caters for the unstable previously backfilled ground conditions that the conveyor is installed on, while the tail drive station has a unique jacking mechanism to adjust the height and level of the drive station to accommodate ground settlement. The scope included transfer of the existing shiftable conveyor onto the new extendable conveyor and of the existing spreader to the shiftable conveyor's new location.

A project to replace the boom on an existing ash spreader at a power plant in

A model of the F'Derick project in Mauritania. From right to left, the primary and secondary crushing stations, leading to the transfer tower and train loading station via a network of conveyor installations.



South Africa presented a number of challenges. The machine was originally installed more than 40 years ago by another OEM and, despite the fact that the original drawings were not available, TAKRAF replaced the 31.5m-long spreader boom in less than four months. TAKRAF assessed the machine damage and planned a solution that included a bespoke design with several improvements to the original design.

In Canada, TAKRAF's train unloading technology is an essential part of key material handling equipment supplied by the group for an important Canadian bulk terminal expansion, which also included a high-capacity quadrant beam shiploader. The project scope covered two single railcar dumpers, operating in tandem mode, an indexer and five wheel grippers. The railcar indexer handles a string of railcars with a maximum pulling force of 150 tonnes at the sidearm and can move trains in both directions with superb positioning accuracy into the tandem dumper.

NLC India Limited (NLCIL), one of the largest power producers in India, continues to place trust in TAKRAF's capabilities, with collaboration between the two parties dating back to the 1980s. A recent award comprised four revamping and maintenance orders, two of which concerned the major revamping of both mechanical and electrical portions of bucket wheel excavators (BWEs) from other OEMs to extend the operational life of the equipment. The remaining two orders concerned maintenance contracts for BWEs originally supplied by TAKRAF and another OEM.

STRATEGIC INNOVATION

TAKRAF seeks partnerships with leading suppliers of complementary technologies as part of its commitment to deliver ground-breaking solutions, such as the world's most powerful belt conveying system using gearless conveyor drive (GCD) technology. Through a strategic partnership with ABB, a global technology leader in electrification and automation, TAKRAF delivered the equipment to Chuquicamata in Chile, to move copper ore extracted underground to an above-ground processing plant. This incredible system boasts a total installed drive power of 58MW.

The partnership with ABB, dating back to 2011, has been renewed for the deployment of GCD technology on TAKRAF bulk material handling solutions. Gearless drives eliminate the need for a



Tail drive station of new extendable conveyor for a backfill expansion project in South Africa.



Replacement boom for an ash spreader ready for transport to site in South Africa.



The TAKRAF Sizer Day in Germany showcased the latest in cutting-edge sizer technologies.

gearbox, thereby significantly reducing the number of main wear parts, which results in increased efficiency and reliability and less maintenance. Further advantages include a considerable reduction in the drive system's footprint and emissions. Studies at Chuquicamata showed that CO₂ emissions were reduced by 66% as compared to diesel truck engines for the same copper production volume.

In a further important development, TAKRAF's advanced sizer technology was demonstrated to clients at the TAKRAF Sizer Day in 2024, held at the group's Product & Service Center in Lauchhammer, Germany.

The TAKRAF sizer portfolio covers

primary, secondary and tertiary sizing applications, with the Standard Class Sizers offering a highly optimized and economical solution and the X-TREME Class Sizers providing maximum reliability in the most extreme conditions, including hard rock applications. The cutting-edge sizing technology showcased included the robust TAKRAF WolfRAM Armor and TAKRAF's specialized crushing tooth configurations that are setting new standards in the industry, highlighting TAKRAF's commitment to redefining what is possible in mining operations.

TAKRAF continues to live up to its motto: "Innovation out of tradition — It pays to talk to a specialist!"

eLCC – a new solution for calcined clay from AUMUND

*AUMUND equipment demo plant
and (inset) AUMUND eLCC –
Linear Calcination Conveyor.*



A significant contribution to the decarbonization of cement production is being made, with new types of cement which use calcined clay and a smaller proportion of clinker than in traditional cement manufacture. Clay calcination requires lower burning temperatures than clinker production, so the carbon footprint of the cement is reduced significantly. Almost four years ago, AUMUND teamed up with HOLCIM on a common project for the electrical calcining of clay on an AUMUND pan conveyor.

AUMUND, with its 27,000 references located in plants around the world, has been a trusted partner of HOLCIM for decades. As a renowned supplier of conveying and storage technology solutions, AUMUND has expertise in conveying bulk materials at temperatures of up to 1,000°C.

The design phase for the electrical Linear Calcination Conveyor eLCC culminated in the construction of a demo version at the AUMUND Fördertechnik headquarters in Rheinberg in Germany, and initial calcination tests were carried out with encouraging results.

Thermal activation of the clay is

achieved efficiently with the combination of radiant heat and material circulation on the conveyor, which is completely enclosed and insulated. This reduces the energy requirement compared to other solutions, and the volume of the heating chamber can be kept very compact and relatively small.

The design significantly reduces possible heat losses and allows the system to heat up and start up quickly, which offers great flexibility to plant operators.

As the system is based on the robust AUMUND pan conveyor, it benefits from the proven durability of the equipment technology. A further advantage is the modular design which allows production capacities to be increased at any time by extending the equipment.

Other heating systems such as ceramic gas burners could be installed instead of electrical heating elements, but electrical heating elements can be powered 100% by renewable energies such as wind or solar power, so that the calcination process can be completely carbon-neutral, with no CO₂ emissions generated.

The first complete industrial plant for this process will be constructed in 2025.

ABOUT THE AUMUND GROUP

The AUMUND Group is one of the experts in the field of bulk handling with more than 27,000 references. Its technically mature, innovative solutions can be seamlessly integrated into almost any customer and site situation.

The AUMUND equipment for the safe transport of hot, abrasive material or for optimized cooling of the transported material, the sophisticated storage and blending bed technology as well as mobile loading and unloading systems combine to make the group's companies recognized market leaders in demanding industries.

At the same time, this makes the AUMUND companies reliable partners for plant manufacturers and plant operators — be it for the construction of new plants, conversions or even modernizations. Three production sites with engineering and R&D capacities, an in-house spare parts production, two service companies, four warehouse locations, five service centres and 20 sales locations ensure plant availability for customers worldwide — while at the same time conserving resources.

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AMECO: German engineering evolved – from strong foundations to European adaptability

Within Germany but equally shaped by its French origins, Swiss organizational structure, and international collaboration, AMECO Group represents a fresh and dynamic take on traditional German engineering. This German Engineering 2.0 embodies a fusion of precision, reliability, and adaptability that meets the demands of today's fast-evolving global markets.

A LEGACY OF TRUST AND EXPERTISE

AMECO has a legacy of trust and innovation, with more than 400 machines operating worldwide. These machines run an average of 18 hours daily, half performing reliably for over 20 years. AMECO's flawless safety record — zero severe injuries or structural failures — is a testament to AMECO's unwavering commitment to durability and excellence, which directly stems from German engineering values.

While AMECO retains its technical expertise and design headquarters in Germany, its strategy incorporates manufacturing hubs in Poland and Turkey. This approach combines high-quality standards with efficient production, enabling AMECO to meet the diverse demands of global markets.

AMECO CORE VALUE PROPOSITION POWERED BY GERMAN ENGINEERING

1. FIT-FOR-PURPOSE SOLUTIONS FOR RAPIDLY GROWING CUSTOMERS

AMECO's solutions are tailored to meet the specific needs of industries experiencing rapid growth, ensuring scalability and adaptability:

- ❖ **Example:** a shiploader originally designed for urea was adapted for grain handling at 1,320tph (tonnes per hour), enabling the client to pivot quickly in response to geopolitical changes.
- ❖ **Example:** for a 20,000-tonne sulphur stockpile, AMECO engineered a dual-boom portal reclaimer capable of withstanding extreme temperatures from -40°F to 90°F . This solution prioritized safety and operational efficiency while addressing a critical industry challenge.

2. DESIGNED IN GERMANY, ENHANCED GLOBALLY

AMECO exemplifies a fresh perspective on German engineering — retaining the precision and reliability of German design while incorporating global adaptability.



Fire & Ice: where Arctic temperatures meet flammable product, safety handled by one of AMECO's largest reclaimers.

AMECO's machines are built on a foundation of excellence in German engineering, delivering precision, reliability, and long-lasting performance. Every machine is carefully engineered to meet the specific needs of its application, with advanced balancing and location-specific designs that extend the lifespan of critical components, such as slewing rings.

By contrast, competitors' machines often fall short in key areas due to generic designs that lead to inefficiencies and material dead zones, especially when they fail to luff as promised. Furthermore, frequent bearing failures — particularly slewing bearing failures — cause significant disruptions, resulting in costly

replacements and millions in revenue losses due to downtime.

AMECO's reclaimers overcome these challenges with robust engineering and precision balancing, guaranteeing slewing rings for an impressive 20-year lifespan.

- ❖ **Case in point:** at Cedar Springs, Georgia-Pacific operates four AMECO reclaimers, with slewing rings dating back to the mid-1990s. Only one slewing ring has required replacement, a testament to the durability and reliability of AMECO's designs.

3. RIGOROUS ENGINEERING SAVES MONEY AND SIMPLIFIES DELIVERY

AMECO's modular approach reduces

costs, shortens assembly time, and minimizes operational disruptions, offering financial and logistical benefits to customers and EPCs alike:

- ❖ At Kentucky Utility, AMECO replaced inefficient front loaders with a dual-boom portal reclaimer, achieving a throughput of 750tph and minimizing product loss. This solution enabled the client to monetize gypsum recycling, turning waste into revenue.

4. EMPOWERING CUSTOMERS WITH GERMAN ENGINEERING ETHOS

Ninety per cent of unexpected downtimes stem from misalignment between maintenance and operations. AMECO bridges this gap through comprehensive training, predictive maintenance, and digital solutions:

- ❖ In Bolivia, AMECO's PS2 Dual-Boom Portal Reclaimer improved fertilizer handling with a loading rate of 200tph, reducing downtime by 5%. The client's team, equipped with tailored training, ensured the machine's optimal performance.
- ❖ AMECO's new MaxCare service offering further aligns maintenance and operations, bundling together inspections, HMI and PLC upgrades, and priority spare parts access to maximize uptime and reduce OPEX.

5. EXPANDING AFTER-SALES SERVICES TO NON-AMECO MACHINES

AMECO's engineering expertise extends to non-AMECO machines, filling a critical gap left by OEM consolidations.

- ❖ **Example:** a Middle Eastern operator entrusted AMECO with revitalizing a fleet of six machines, including shiploaders and reclaimers, initially supplied by another OEM. AMECO restored operational efficiency and reliability, demonstrating the value of its after-sales services. By leveraging AMECO's German engineering expertise, the equipment's operational efficiency was restored, and maintenance reliability improved.

BUILDING MOMENTUM IN 2025

Looking ahead, AMECO is advancing its leadership through initiatives designed for a rapidly evolving industrial landscape. By leveraging partnerships and developing relevant digital solutions, AMECO continues to adapt to its future customers' needs and new standards in engineering excellence.

- ❖ **Expanding partnerships in Indonesia:** collaborating with local



Dozers are no match to an AMECO reclaimer.

stakeholders to align production capabilities with regional needs.

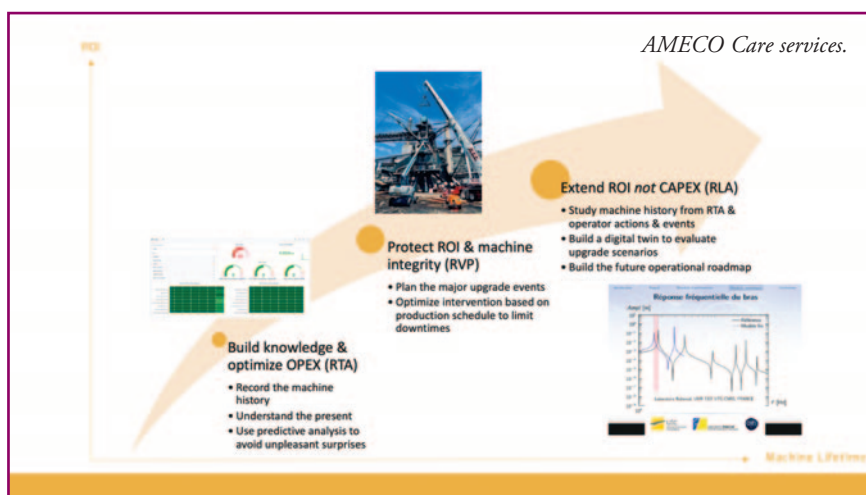
- ❖ **Greenfield projects in Brazil and Canada:** supporting sustainable fertilizer production to strengthen local supply chains and reduce global dependency.
- ❖ **Enhancing after-sales care:** expanding AMECO Care services – including RealTime AMECO (RTA), Residual Lifetime Assessment (RLA), and Revamping (RVP) — to empower customers with superior operational efficiency and equipment longevity.

GERMAN ENGINEERING'S EVOLUTION: A GLOBAL PERSPECTIVE

German engineering remains at the heart of AMECO's expertise, but the company's

evolution reflects a broader vision. With roots in France, a Swiss structure, and an emphasis on international collaboration, AMECO embodies European ingenuity with a global outlook. This shift to German Engineering 2.0 represents precision, adaptability, and partnership, enabling AMECO to thrive in today's interconnected yet fragmented industrial landscape.

Designed in Europe and manufactured closer to local markets, AMECO's solutions combine the best of precision engineering with market-specific relevance. By redefining the traditional German ethos into a collaborative and global framework, AMECO stands to show how modern OEMs thrive globally while retaining core business value for customers around the world.



Haivanship expands operations into northern Vietnam with two new Konecranes Gottwald ESP.9B cranes on barge

Major Vietnamese maritime-logistics operator Haivanship (HVS) is growing its Konecranes fleet with two Lloyd's-certified Generation 6 Konecranes Gottwald ESP.9B cranes on barge. The order for the first crane was booked in Q3 2024 and the second in Q4, with both to be delivered at the end of 2025.

Haivanship is currently providing coal transshipment using two Konecranes Gottwald HPK 7400B cranes at transshipment buoys in Go Gia, Ho Chi Minh City, servicing power plants in southern Vietnam, especially in the Mekong Delta. The Vietnamese operator specializes in bulk handling of coal from Australia and Indonesia. Coal is still a critical energy resource in Vietnam, fuelling approximately half of the nation's electricity supply.

HVS is now expanding its coal transshipment business in northern Vietnam, starting a project at the South Cat Ba Deep Water Anchorage, with a depth of approximately 20 metres for vessels up to 210,000dwt (near Haiphong port and Hon

Mieu, Cam Pha Anchorage of Quang Ninh), using two Lloyd's-certified Generation 6 Konecranes Gottwald ESP.9B crane on barges.

"Our experience working with Konecranes equipment in the south has been very positive. The cranes are efficient and have consistently delivered reliable performance. Now this new Konecranes equipment will play a key role in handling coal transshipments on the open sea and expanding our services into the north," says Tran The Vinh, General Manager at Haivanship.

The Generation 6 Konecranes Gottwald ESP.9B mobile harbour crane is fully certified for barge operations under the Lloyd's Register Code for Lifting Appliances in Marine Environments. Engineered to perform in demanding open-sea environments, the crane can withstand wind speeds reaching 24 metres per second and wave heights up to 2.5 metres. The cranes come equipped with Konecranes TRUCONNECT remote

monitoring, providing HVS with vital crane data for predictive maintenance planning.

"Haivanship is a valued partner in Vietnam and we're very pleased to add to their fleet with our Generation 6 technology. Supporting the company's expansion is perfectly aligned with Konecranes' goal of growing our business in the country," says Holger Wagner, Sales Manager for Asia-Pacific at Konecranes.

ABOUT KONECRANES

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Steelpaint wins coatings contract with Chinese shipowner in landmark deal

Xiamen Minhua Shipping has specified a Steelpaint corrosion protection system for a trio of newbuild multi-purpose cargo ships building at Fujian Shipbuilding's yards in China.

The order marks the Germany-based coatings specialist's first newbuilding contract with a Chinese shipowner.

The first vessel in the series, the 12,000dwt *Min Hua 9* delivered from the Fujian Hengsheng shipyard in June, is now operating with a Stelpant-PU-Zinc universal primer protecting steel cargo holds, hatch covers, decks, topsides and hatch coamings against corrosion.

The polyurethane and zinc-based primer will also protect sisterships *Min Hua 15* and *Min Hua 16*, both of which are under construction at the Fujian Donghai Shipyard, with deliveries scheduled for December 2024 and November 2025.

Li Jianbin, Xiamen Minhua Shipping's General Manager, said: "The operational profile of these multi-purpose cargo carriers required a long-lasting, fast-drying, and easy-to-apply primer that could be relied upon.

"After experience with conventional epoxies failing to properly protect cargo holds against impact damage and corrosion, we found Stelpant-PU-Zinc to have better impact resistance. It is too early to confirm, but we expect the primer will reduce through-life coating repair and maintenance costs by about 50% compared to previous applications."

With its high-solid formulation and finely meshed zinc pigments Stelpant-PU-Zinc can be applied in temperatures ranging from -5°C to $+50^{\circ}\text{C}$, and with a relative humidity level as high as 98%.

For tank tops and lower stools/hoppers, Steelpaint recommends a film thickness of



2 x 80µm after grit blasting to Sa2.5, while other areas need only one 80µm coat before a 120µm application of a conventional topcoat epoxy.

Dmitry Gromilin, Steelpaint's Chief Technician, said: "This contract represents a significant milestone for Steelpaint in China. While we have corrosion protection systems on a number of Chinese-built vessels, this is our first newbuilding specification for a Chinese shipowner.

The success of the first application aboard *Min Hua 9* will help further establish our presence in China and open the door to more shipowners across the Asia-Pacific region."

Compatible with most top-coats without the need of a tiecoat, the high zinc content of Stelpant-PU-Zinc provides cathodic protection and can be applied on the outer hull areas preventing corrosion damage. The zinc-rich primer can be easily recoated over the vessel's lifetime, affording smart repair at dry-docking.

A Chinese bulk carrier operator is

currently trialling Stelpant-PU-Zinc on a 100m² test patch in the cargo hold of one vessel. Another operator is also trialling the corrosion resistant coating on a ship's hull (topside) and crane.

ABOUT STEELPAINT GMBH

For more than 40 years, Steelpaint has enhanced the life and durability of heavy-industry facilities, particularly in the maritime sectors. Thanks to one-component polyurethane resins, the Germany-headquartered company's special high-tech coatings have raised the technological bar in corrosion resistance, offering impressive benefits over conventional epoxy coatings solutions.

Steelpaint is a subsidiary of the coatings company Emil Harrasser, founded in Kitzingen, Germany in 1890. Its products are used widely in port and offshore facilities, sheet pilings, internal and external linings, tanks, bridges, and ship structures. They can be used in combination with cathodic protection.



Steelpaint is applying its Stelpant-PU-Zinc primer to the steel cargo holds, hatch covers, decks, topsides and hatch coamings of three Xiamen Minhua newbuilds.

German engineering expertise: Liebherr Maritime Cranes



The Liebherr LHM 800 mobile harbour crane, at Marcor Stevedoring's Hartel Terminal in Rotterdam, has a lifting capacity of up to 144 tonnes.



Liebherr-Rostock GmbH continues to excel in the maritime crane industry with its innovative and sustainable solutions. The recent deployment of the LHM 800 mobile harbour crane at Marcor Stevedoring's Hartel Terminal in Rotterdam exemplifies this. This crane reflects the attributes of German engineering, combining modern technology with a focus on environmental responsibility. Liebherr's high-quality engineering products evolve with the times, meeting the latest technical requirements and customer needs, making them powerful tools for any transshipment scenario.

HANDLING A VARIETY OF COMMODITIES

The LHM 800 is a multi-purpose crane capable of handling various cargoes, enhancing port flexibility. Specially tailored to support Marcor in handling dry bulks, it is also adept at managing other types of cargo. With a lifting capacity of up to 144 tonnes, the LHM 800 is a valuable asset for Marcor Stevedoring, which handles approximately six million tonnes of bulk cargo annually.

STRATEGIC PARTNERSHIP

Marcor Stevedoring, a prominent client of Liebherr, integrates the LHM 800 into its upgraded terminal infrastructure. The crane supports Marcor's operations at the Hartel Terminal, which features a 130,000m² facility and a 600-metre quay. The site accommodates vessels ranging from barges to 120,000dwt baby-Cape vessels, facilitating both board-to-board transshipment and terminal discharge. This partnership underscores the importance

of reliable and efficient equipment in maintaining high operational standards.

STAYING COMPETITIVE WITH TECHNOLOGICAL INNOVATIONS

Liebherr's commitment to innovation is evident in the LHM 800's features. One of the most significant advancements is the crane's electric drive unit, which allows it to operate without a combustion engine. This innovation reduces local emissions and contributes to a quieter noise profile, enhancing the working environment at the terminal.

SmartGrip technology also plays a role in offering solutions oriented around increasing efficiency. It optimizes the grab entry angle and adapts to the bulk material in use without the need to change the grab. This system ensures that the grab is filled based on an optimum load graph, reducing overload and its effects on the

crane's structure. These technological advancements enhance operational efficiency and align with Marcor's sustainability goals by reducing fuel consumption and emissions.

CONCLUSION

Liebherr's LHM 800 brings with it a series of innovations that stem from close collaboration with customers, while also looking towards progress and future demands within the port logistics industry. With its advanced technology and sustainable features, this crane is set to transform dry bulk and other cargo handling, establishing new standards for efficiency and environmental responsibility. The operation of the crane without a combustion engine underscores Liebherr's commitment to innovation and sustainability, positioning the company as a key player in the maritime industry.

Preserving quality in grain and food conveying

Maintaining food integrity is increasingly important due to global challenges like droughts, floods, and fires. Ken Mouritzen from BLT WORLD emphasizes the role of agriculture and industry in safeguarding food products post-harvest. The use of inappropriate grain handling equipment can damage kernels, particularly large grains like corn, which are susceptible to physical harm and contamination by fungi and insects.



conveyor belt skirting, creates negative pressure to prevent material escape without causing belt wear. Conventional skirting systems often result in severe wear, allowing dust and material to leak, potentially harming workers and consumers.

The ScrapeTec system, made of durable, non-flammable materials, eliminates the need for constant maintenance, offering cost savings. DustScape, a filter cloth above the belt, retains dust without affecting airflow, further reducing operational costs. The

Innovative solutions, such as AirScape and TailScape systems, help reduce abrasive wear on conveyors, preventing microplastics and rubber from entering food. Dust is another concern, especially in environments with prolonged exposure, where it can cause respiratory issues and, in some cases, create explosive mixtures. Proper conveyor skirting is essential to ensure worker safety and maintain food quality. Bulk conveyor systems often face

challenges like dust, spills, misalignment, and abrasion, leading to material contamination and system wear. BLT WORLD's ScrapeTec systems, installed in a food production plant, addressed these issues. After the system's installation, dust levels at transfer points significantly decreased, reducing health risks, energy consumption, and maintenance costs.

The AirScape system, a contact-free

TailScape enhances AirScape's performance by sealing the rear transfer area and preventing dust and spillage.

The PrimeTracker belt tracker solves alignment and wear issues, optimizing the conveyor system's performance and longevity. These advanced solutions, suitable for various bulk materials, ensure cost efficiency, safety, and reduced breakdown risks in conveyor systems.

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Vollert 

Reliable service and future-oriented solutions: REMA TIP TOP supports Lenzing with critical conveyor technology in pulp mill



REMA TIP TOP installs the conveyor belts at a height of 40m at Lenzing.

At the pulp mill of international fibre manufacturer Lenzing in central Austria, uninterrupted material transport is essential for a smooth production process. Conveyor belts in particular, which transport moist wood chips among other things, have to withstand extreme loads in order to avoid breakdowns and downtimes. As a leading international supplier of conveyor technology and wear protection solutions, REMA TIP TOP supported the plant with a tailor-made solution for two critical conveyor belts with a total length of over 200 metres.

Two profiled, oil- and grease-resistant EP400/3 4+2 conveyor belts were installed at a height of 40 metres. These are equipped with 3mm high nubs that provide a non-slip surface — a key feature for the safe and efficient transport of the moist wood chips, which have a water content of around 40%. The special design of the conveyor belts ensures that they can withstand the extreme conditions of wood processing without swelling or losing strength. This is mainly due to the wood components cellulose, lignin and hemicellulose in combination with moisture, which quickly makes conventional conveyor belts unusable.

“In pulp production, the smooth running of the conveying processes is crucial. With our comprehensive maintenance service, we support Lenzing in optimizing planned maintenance intervals and minimizing unplanned downtimes,” explains Wolfgang Tronegger, Managing Director of REMA TIP TOP Industrie GmbH. “Like us, Lenzing has high



The REMA TIP TOP experts select a special conveyor belt profile for optimum material transport of the moist woodchippings.

quality and safety standards, which is the basis for a long-term co-operation. The work was carried out by an experienced three-man installation team and completed in the agreed time and quality.

By providing durable conveying solutions, REMA TIP TOP helps to ensure that production in the pulp mill can be planned in advance and carried out largely without interruption. This increases Lenzing's operational reliability. “This type of partnership cooperation shows how we can offer our customers added value as a reliable service partner — from consulting and planning to precise implementation and long-term support,” continues Wolfgang Tronegger.

This type of proactive component maintenance is no longer standard practice everywhere.

“Especially in a difficult economic situation in the construction and concrete industry, such as we have been in for the past two years, the repair aspect is becoming increasingly important,” says Wolfgang Tronegger. “Many customers find it difficult to carry out the necessary maintenance work with their own personnel. They are therefore concentrating more and more on their core competencies and reacting quickly to ‘unexpected’ damage. REMA TIP TOP Industrie GmbH is thus continuously expanding its own service in close co-operation with its German REMA TIP



Precision required: installation of the conveyor belt with a crane to the installation site at a height of 40m.

TOP colleagues, and the number of technicians employed is also steadily increasing.

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 tire 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.

World's largest bulk export port authority chooses two Konecranes Gottwald mobile harbour cranes to boost lifting capacity

Pilbara Ports in Western Australia has ordered two ESP.9 Konecranes Gottwald mobile harbour cranes for the Port of Port Hedland — the world's largest bulk export port by tonnage. The cranes were booked in Q4 2024 and are scheduled to be delivered to Pilbara Ports Lumsden Point development in 2026.

The Port of Port Hedland handled more than 570 million tonnes of throughput during the 2023–24 financial year. With forecast trade growth in the Pilbara region, the Lumsden Point development is a key part of the plan to increase capacity at the port.

These 200-tonne lifting capacity ESP.9 Konecranes Gottwald mobile harbour cranes will significantly improve the port's ability to handle containerized bulk material and project cargo, alleviating increasing congestion and diversifying trade. And as each crane is equipped with a 100-metre cable reel for external power supply, Pilbara Ports can improve energy efficiency and significantly cut on-site exhaust and noise emissions.

"Mobile harbour cranes are a critical component of the Lumsden Point development, facilitating the export of battery metals, the import of renewable energy infrastructure and supporting the growth of direct shipping services to the Pilbara," says John Freimanis, Project Director Lumsden Point, Pilbara Ports.

"Following a competitive process, we were impressed by Konecranes' customer focus and reliable performance. Pilbara Ports is excited to partner with Konecranes to tailor this high-performance infrastructure to the unique needs of Port Hedland."

The cranes come equipped with a Tandem-lift Assistant, enhancing safety and precision when handling heavy or oversized loads using both cranes. Performance is ensured through a combination of a condition-based maintenance system, Konecranes TRUCONNECT remote monitoring and a spare parts package that can be quickly accessed.



"Once again, we see our material handling equipment being entrusted to support a vital link in the global economy. Being selected to support the world's largest bulk export port authority is a great honor for Konecranes. We look forward to helping Pilbara Ports meet its productivity and sustainability goals," says Holger Wagner, Regional Sales Manager at Konecranes.

This contract 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, Konecranes will continue to do more with less.

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

KINSHOFER attachments for bulk cargo

The KINSHOFER C-VHD is often seen on Dutch harbours, loading or unloading ships. Here it is the C60VHD 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 becoming 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 orange peel grabs (P-Series) for excavators with an operating weight of up to 120 tonnes and re-handling clamshell buckets (C-Series) for excavators and carriers with an operating weight from 18 tonnes of up to 100 tonnes.

If you want to handle bulk material on industrial or harbor sites 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. You can get all of these 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.

An alternative to the clamshell buckets is the KINSHOFER orange peel grab P-series. Sizes range from the smallest P22V for excavators from 16 tonnes operating weight up to the huge P120VHD with a staggering volume of 3,500 litres in the largest variant. Different shell designs — narrow or wide, half or fully closing tines — allow to match the grab to the task. These heavy duty, sturdy grabs are often used to handle scrap, waste or rocks. As the C-series, the orange peel grabs are equipped with a robust 360° rotation. Accurate fittings eliminate tine distortion, the end stops for closing and opening are especially solid. Bolts are reinforced and have a large bearing surface. The hydraulic cylinders that operate the arms are

protected by replaceable piston rod protections.

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."

Comes in pretty handy when you need to handle bulky material – the P-series orange peel grabs. Here the P51VHD for excavators with up to 50 tonnes operating weight.



Sennebogen: focusing on CO₂ reduction

Safe loading: the machines are lifted precisely onto the barge using a tandem lift.



EIGHT LARGE MACHINES SHIPPED BY BARGE FROM STRAUBING TO CHARLESTON

SENNEBOGEN has successfully loaded eight large machines onto a barge to transport them by water from Straubing via Antwerp to Charleston, South Carolina. The machine transport was carried out in close co-operation with the heavy haul company Karl-Groß from Regensburg, which has extensive experience in the field of heavy load transportation. The use of barges brings considerable advantages in terms of sustainability and costs.

CHALLENGES DURING LOADING

Loading the eight machines, including the SENNEBOGEN 855 and 870 models in crawler and mobile versions, presented a logistical challenge. With operating weights of between 70 and 105 tonnes, loading them onto the barge was a complex undertaking that required special measures.

“As the machines could not be lifted completely, we had to dismantle the counterweights on site and reassemble them after loading. It was also necessary to temporarily close the road between the Sennebogen plant and the port,” explains Roland Hermann, Head of Customs and

Foreign Trade Machine Shipping at SENNEBOGEN.

TANDEM LIFT: EFFICIENT PROCESS AND INNOVATIVE LIFTING TECHNOLOGY

Machines with a total weight of 700 tonnes were loaded. The heavy load required the use of a tandem hoist with two cranes, which were precisely controlled by experienced crane operators. This technique enables the weight to be distributed evenly and minimizes the load on the cranes. “The challenge was to lift the machines into the barge without any interruptions or jolts. The first machine was loaded at 7am and seven machines were safely stowed by midday,” reports Hermann.

SHIPPING BY BARGE OFFERS CONSIDERABLE ENVIRONMENTAL BENEFITS

The use of inland waterway vessels for transportation offers considerable environmental benefits. While CO₂ emissions for road transport are around 113 grams per tonne-kilometre, they are only 34 grams for transport by inland waterway vessel. This reduces CO₂ emissions for the approximately 800km route by 75%, which corresponds to a saving of around 49 tonnes of CO₂. “This is an important step

towards increasing the sustainability of our machine shipments. We plan to carry out inland waterway loading regularly in future and are currently working on implementing a comprehensive sustainability report at SENNEBOGEN,” Hermann continues.

CO-ORDINATION AND CO-OPERATION WITH THE PORT

A smooth loading process was only possible thanks to the close co-operation with the port of Straubing, which was heavily involved in the planning and implementation of the barrier measures. The city of Straubing also supported the necessary transport permits.

ROUTE VIA ANTWERP AND ONWARD SHIPPING TO SOUTH CAROLINA

The machines will travel from Straubing via Antwerp, where some of the machines will be loaded directly onto an ocean-going vessel, while the others will be transported on to Zeebrugge. The final destination is the port of Charleston, South Carolina, which is an important transshipment point for the American Sennebogen LLC due to its good infrastructure and service quality. The transportation from Belgium to Charleston will take around two to three weeks.



The undercarriage of a 9300 E port crane weighs an impressive 107 tonnes.

HEAVY-DUTY SHIPPING VIA INLAND WATERWAY VESSEL AT SENNEBOGEN

The successful loading of the eight machines demonstrates the potential of barge loading as a cost-effective and environmentally friendly alternative to conventional transportation routes.

"We used to concentrate on North Sea ports such as Hamburg and Bremerhaven,

but the high reloading costs in Duisburg made this increasingly unattractive. Transporting machines by barge enables us to reduce logistics costs and act more sustainably at the same time," explains Hermann.

In the summer, further transports were carried out by barge. These included the loading of a SENNEBOGEN 895 E material

handler to Israel and a 9300 E harbour crane to Turkey. The heaviest component to be loaded weighed an impressive 107 tonnes.

The co-operation with the heavy load terminal and the flexible planning of transport routes will continue to play a central role in SENNEBOGEN's machine shipments in the future.

DCi



The main characters (L-R) of heavy load handling: Roland Hermann and Thorsten Resch from SENNEBOGEN with heavy load forwarder Klaus Altmann and Andreas Löffert as well as Martin Bayer from the port of Straubing-Sand.

An ongoing commitment to CSUs

continuous unloading remains a popular staple in the bulk handling industry



Vigan unloaders meet the ever-growing need for foodstuffs

Feeding the world population has always been a challenge, and it is becoming even more complex due to changing family patterns, eating habits, climate change, and geopolitics. As the global population

continues to rise, people are migrating to already overpopulated cities and spending less time preparing their daily meals. In industrialized countries, there is a growing awareness of quality of life, with people

seeking to work closer to home, spend more time with family, and live better.

This dichotomy creates a world running at multiple speeds. In developed countries, people enjoy the benefits of a high living



Vigan also supplies shiploaders, such as this 1,500tph model in Romania.

standard, while in developing regions, individuals are willing to work harder for less. The bulk logistics industry, including Vigan, faces the consequences of these global shifts. More grains and oil seeds need to be grown, harvested, and transported, transcending world politics.

Efficient infrastructure from farm to fork is essential, especially in less populated agricultural areas.

In many ports, unloading and loading equipment is outdated and not suited to new demands in capacity and vessel size. Countries like Brazil and Russia play crucial

roles in feeding the masses, with new agricultural spaces and modern infrastructure. Vigan, a Belgian manufacturer founded in 1968, sees this dual-speed world clearly. The company often receives requests to transform and adapt unloading and loading equipment in older ports,



Handling rapeseed at 300tph in Germany.



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...





Vigan NIV500 unloading wood pellets at Eemshaven, the Netherlands.

aligning them with the latest standards in energy consumption, dust and noise emission levels, and ease of operation.

Vigan's headquarters in Nivelles, Belgium, strategically located near Brussels and the international port of Antwerp, facilitating worldwide shipping and connectivity with top-quality suppliers. Initially focused on pioneering pneumatic unloaders, Vigan has diversified its offerings to include grain pumps, pneumatic and mechanical ship-unloaders, loaders, and turnkey terminal solutions. The company's

commitment to continuous improvement and customer satisfaction has led to the development of advanced equipment with capacities up to 2,000 tonnes per hour.

Vigan's production remains rooted in Belgium. This local manufacturing ensures rigorous quality control and rapid after-sales support. Vigan's production facility has doubled in capacity in recent years, reflecting the company's dedication to long-term customer relationships.

Each machine is pre-assembled in Nivelles, reducing on-site assembly times

and ensuring timely delivery.

Vigan exports 99% of its equipment, with emerging markets in rapidly growing regions. The company's expertise in emissions-reducing technology aligns with global environmental priorities, creating new market opportunities. Vigan's equipment is renowned worldwide, akin to Belgian beer and chocolate, and the company has fostered strong partnerships with key players in Belgium and beyond.

Vertical integration ensures comprehensive control over all stages of production,



Vigan's factory in Nivelles, Belgium.



Best Solution of Bulk Handling

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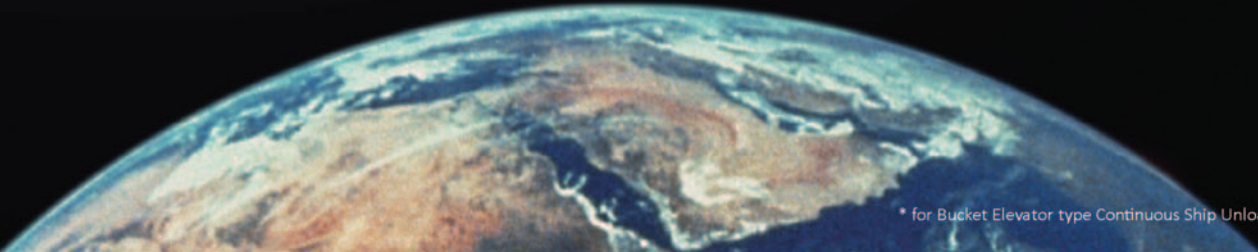
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8-1, Akashicho, Chuo-ku, Tokyo 104-0044 JAPAN

TEL: +81-3-5550-5375

FAX: +81-3-5550-5366

Website: <http://www.iuk.co.jp/english/index.html>



* for Bucket Elevator type Continuous Ship Unloader

Vigan NIV600 working in Saudi Arabia.



from design and engineering to manufacturing, coating, and quality testing. This approach guarantees exceptional standards and optimal reliability. Vigan's commitment to technological advancement is exemplified by its dedicated department for electrical and electronic components and the introduction of high-capacity pneumatic CSUs.

In summary, Vigan stands as a beacon of innovation and reliability in the field of pneumatic ship-unloading equipment. With a rich history dating back to 1968, the company consistently demonstrates its commitment to quality, customer satisfaction, and technological advancement. As Vigan continues to expand its global footprint, it remains dedicated to

addressing the evolving needs of its clients, offering tailored solutions that enhance operational efficiency in ports worldwide. With a strong emphasis on sustainability and a proactive approach to innovation, Vigan is well-positioned to lead the industry into the future, solidifying its reputation as a trusted partner for businesses in the maritime sector.

Vigan bagging station in Djibouti.



Tenova's CSU illustrate its great competence in port handling facilities

Tenova, a leading developer and supplier of sustainable solutions for the green transition of the metallurgical industry, with its brand Material Handling, has a long-standing heritage in the material handling sector and a strong track record of complex project delivery. It leverages robust technical in-house expertise in high-capacity loading and unloading equipment for a wide range of commodities.

Proven and reliable port equipment solutions supplied through years are based on consolidated expertise and excellent record of achievements with successful reference projects around the world handling a broad range of bulk material including: coal, iron ore, bauxite, sulphur, phosphate, manganese ore, potash, salt, urea, pellets, limestone, chrome ore, coke, various fertilizers, sponge iron, wood chips etc.

TENOVA PRODUCT PORTFOLIO AND CSUs

Tenova offers a variety of multipurpose port equipment such as shiploaders and ship-unloaders including its most sophisticated product: the Bucket Chain Continuous Ship Unloader (CSU).

Tenova's Bucket Chain Continuous Unloader uses extremely advanced technology for a highly efficient and low environmental impact unloading process.

Tenova CSUs cover a wide-range of capacities and vessel sizes, capable of discharging large volumes of different materials, from very free flow bulk material to complex, very abrasive or sticky products, within a shorter time period compared with traditional system operated by grabs.

The elevator is equipped with a Tenova



TENOVA GLOBAL CSU REFERENCES

Client	Site	Material	Unit	Capacity	Year
SEINFRA	Pecem BRAZIL	Iron ore and IO pellets	#1 CSU	2,400tph	2016
ADI					
(ex-ILVA)	Taranto ITALY	Coal, iron ore and IO pellets	#1 CSU	4,000tph	2015
ENEL	Brindisi Sud ITALY	Coal	#2 CSUs	1,800tph	2007
ENEL	Civitavecchia ITALY	Coal	#2 CSUs	1,500tph	2007
HYDRO (Ex Alunorte)	Barcarena BRAZIL	Bauxite	#1 CSU	2,000tph	2002
APS	Savona ITALY	Coal, iron ore and several multi materials	#1 CSU	2,000tph	2002
ADI (ex-ILVA)	Taranto ITALY	Coal, iron ore and IO pellets	#1 CSU	7,200tph	1999
LUCCHINI	Piombino ITALY	Coal, iron ore and IO pellets	#1 CSU	2,500tph	1999
MEXCARBON	Lazaro Cardenas MEXICO	Coal	#2 CSUs	1,500tph	1999
SIDMAR	Gent Belgium	Coal, iron ore and IO pellets	#1 CSU	3,000tph	1999
HYDRO (Ex Alunorte)	Barcarena BRAZIL	Bauxite	#1 CSU	2,000tph	1996
INTERALUMINA	Puerto Ordaz VENEZUELA	Bauxite	#1 CSU	2,400tph	1992

patented tailor-made digging foot in order to efficiently collect the material from the ship's hold and transfer it to the jetty/port conveying system. Since the unloading operation is continuous, these machines are characterized by very high performances and a power consumption without the cyclic peaks typical of discontinuous machines such as grab ship-unloaders.

Furthermore, thanks to a material path that is fully enclosed, Tenova CSUs significantly reduce the environmental footprint of marine terminals, specifically dust and noise emissions, and are thus suitable to operate in particularly sensitive areas.

It is designed to guarantee maximum operating safety, easy manoeuvring, reduction of maintenance, wear reduction, and maximum components standardization.

Particular attention is also given to solving operative problems relating to the

digging foot inside the hold of the ship. In order to obtain the widest working range inside the hold, the lower part of the bucket elevator is designed so as to operate with different lengths and configurations. The above-mentioned devices guarantee a high degree of safety for the continuous ship-unloader, as well as allowing to minimize the use of auxiliary machines for the final cleaning of the hold. Tenova's continuous ship-unloaders incorporate an important design feature covered by international patent: the articulated digging foot.

Through the co-ordinated movement of dedicated hydraulic cylinders, the digging foot designed by Tenova can modify its geometrical configuration so as to obtain the best bucket filling and to reach the walls in order to remove the residuals of material. In the final phase of the discharge, the 'chain tension releasing system' allows

the buckets to collect the material from the bottom of the hatch without any risk to damage the digging foot due to ship movements; it is therefore possible to safely remove as much as 95% before the use of auxiliary machines for final hold cleaning.

MAIN TECHNICAL CHARACTERISTICS

Tenova's CSUs are very flexible machines with:

- ❖ unloading capacities ranging from 500tph (tonnes per hour) up to 7,200tph;
- ❖ unloading vessel range from small barges up to 400,000dwt ship;
- ❖ overall efficiency (through the complete ship-unloading process): ~70–75% depending on the characteristics of unloaded material;
- ❖ reliability: ~98%;
- ❖ availability: ~96%;



- ❖ rail spans and wheel loads based on the needs of the customer — standard value between 15–20m and 25–50 tonnes wheel respectively; and
- ❖ Trafo size: from 630kVA to 2,500kVA;

DELIVERY

Tenova specializes in fabricating and fully assembling off site and in shipping to final destination CSUs in a single unit by heavy lift ship (lo-lo (lift on – lift off) or by flat deck ship or barge (ro-ro (troll on – roll off)).

INNOVATION

Technological innovation is the foundation of the Tenova CSU's competitiveness.

Tenova's engineering process is the driver of R&D, developing flexible, individual and effective design concepts, in particular the digging device and the chain along with the buckets connections which are the key to find the ideal solutions for each customer. By embracing innovation, Tenova is able to offer its customers cutting-edge solutions for CSU.

SAFETY

Employees' health and safety, in addition to environmental protection, are a top priority in the design of Tenova's CSU. The CSU can be operated from portable remote control or from a remote on ground control room. With the principle of Zero Harm as an integral part of its own business, Tenova is committed to designing CSUs in a safe working environment.

AUTOMATION

Tenova's CSU are highly automated machines which implement automatic operation for most of the unloading process. Tenova is continuing to develop innovations in this field in order to reach unmanned and remotely supervised operation in the near future.

ENVIRONMENT

Thanks to a fully enclosed and sealed material path, Tenova's CSUs significantly reduce the environmental impact, specifically for spillage, dust and noise emissions. As such, they are suitable to operate in particularly sensitive areas.

DIGITAL

Digitalization is an essential aspect in highly automated, safe and reliable machines. Tenova applies the most updated digital technology in order to be able to offer products that are highly connected and easy to maintain. In the near future, upon customers' request, Tenova products can be



combined with:

- ❖ virtual reality simulator for personnel training purposes;
- ❖ predictive maintenance based on line monitoring of vibrations and temperatures; and
- ❖ smart anti-collision system to support remote and unmanned operation.

Smart unloading systems that won't let you down



Downtime on ship- and barge-unloaders causes process bottlenecks and significant expense. Yet so many pneumatic vacuum arms are simply not cut out for the job, succumbing to high loads and forces that lead to cracks and failures. FLSmidth-Cement does not believe it should be this way. Therefore it has not only found and strengthened stress points

to ensure its unloading arms won't let customers down, it also backs every DOCKSIDER™ ship-unloader with a performance guarantee.

VACUUM ARMS THAT CAN BE TRUSTED

Two things the customer doesn't want to lose: valuable bulk materials and time. But when a vacuum arm fails, both are at risk.

Unfortunately, many pneumatic vacuum unloading arms simply aren't up to the job. They have evolved from cranes originally designed for vertical lifting and are fabricated from high-tensile steel. As the arms are manoeuvred through deep piles of bulk materials, they are subjected to high loading conditions and forces which could lead to rapid fatigue, cracking and failure.

PNEUMATIC CONVEYING

COMPLETE TERMINAL SOLUTIONS

Whether you receive and distribute material by ship, barge, rail, or truck, we have pneumatic conveying systems designed to make your terminal operate efficiently and reliably.

- Docksider™ and KOVAKO high-capacity ship and barge unloaders
- Airslide® gravity conveyors and Ful-Floor™ fluidized reclaim systems
- Fuller-Kinyon® material transfer systems

Find out more at
flsmidth-cement.com



FLSmidth-Cement uses Finite Element Analysis (FEA) and performs full kinematic studies to identify and strengthen stress points on the DOCKSIDER ship-unloader arm during the design phase. This gives customers a more reliable vacuum arm that won't fail during operation.

INTUITIVE CONTROL SYSTEMS

Automation makes unloading operations safer, more efficient and more accurate. DOCKSIDER ship-unloaders have modern PLC control systems that control all of the unloading functions automatically using easy-to-navigate touchscreens.

The control systems have built-in features to monitor operational status, process settings, historical production data, alarms and maintenance requirements. It can even simulate operating conditions and test the components and sub systems, ensuring that the unloader is ready to work when it is needed.

CARING FOR THE ENVIRONMENT

Unloading operations can be very dusty, presenting a health and safety risk for operators and a threat to the local environment. Not FLSmidth-Cement's systems. From the time the material enters the vacuum nozzle to the time it reaches its storage destination, it is fully encapsulated in a system of piping, hoses and vessels — making DOCKSIDER ship-unloaders among the most environmentally friendly transfer systems in the industry.

The filtration system is either integral to the transfer kettles or installed as a separate filter receiver (for dual-pipeline or extra-high-capacity applications). Pleated cartridges provide optimal cloth area in a compact design, and jet-pulse cleaning and a PTFE media coating offer maximum durability and efficiency.

NO IFs, NO BUTS — PERFORMANCE, GUARANTEED

All of FLSmidth-Cement's ship-unloaders are designed for optimal performance, according to the characteristics of the materials being transported, the capacity, any space constraints, etc. The company's engineers are supported by its Pneumatic Conveying R&D facility, which is capable of analysing and testing hundreds of materials to see how they move through a pneumatic conveying pipeline, their fluidization, response to different pressures, and so much more. FLSmidth-Cement is so confident that it can build the right solution for the customer's specific application that every DOCKSIDER ship-unloader is backed with a performance guarantee.

For high-capacity applications, a separate vacuum filter receiver allows for continuous airflow and faster material transfer. Multiple discharge options, including pressure tanks, feeders and rotary valves enable the operator to convey a wide range of dry-bulk materials — including abrasive products such as alumina and coarse limestone. The system can even discharge through a Fuller-Kinyon® pump — allowing for simple, low-pressure pneumatic conveying, or to provide a durable vacuum seal for material transfer to a dock belt conveyor.

Because every terminal is different, all FLSmidth-Cement's DOCKSIDER ship-unloaders are custom designed for the operator's specific application. Delivering proven performance, reliability and durability, these state-of-the-art ship-unloaders have gained a reputation as being among the best in the world.

Starting with a range of four basic sizes, FLSmidth Cement can supply the right DOCKSIDER ship-unloader for any terminal — whether the operator is

unloading river barges or Handymax bulk vessels, and whether they are conveying to an adjacent belt conveyor or through a 1,200m (4,000ft) pipeline.

CONTINUOUS SERVICE AND SUPPORT

FIELD SERVICE AND EMERGENCY REPAIRS

Getting help when it is needed ensures optimum performance and maximum uptime. FLSmidth-Cement's factory-trained service engineers provide on-site assistance to help users repair or troubleshoot their DOCKSIDER ship-unloader during an emergency or regularly scheduled maintenance. Troubleshooting may be available remotely through the PLC if the operator's system has online capabilities.

TECHNICAL SUPPORT AND TRAINING

Whether the operator needs to train new staff, supplement their skillset, or if they just need more knowhow in the mix, FLSmidth-Cement's engineering staff are always available to assist in any problem solving or training required to meet the needs of the operation.

SPARE PARTS HANDLING

FLSmidth-Cement offers speedy spare parts support for all types of DOCKSIDER ship-unloaders. Many of the spare parts are in stock in the company's warehouses and can be provided immediately to any location worldwide.

UPGRADES AND OPTIMIZATION

For operators that have an older or under-performing unloader that they would like to upgrade, FLSmidth-Cement's design and field service engineers can evaluate the existing system and offer solutions that will keep the system operating at its optimal performance level.

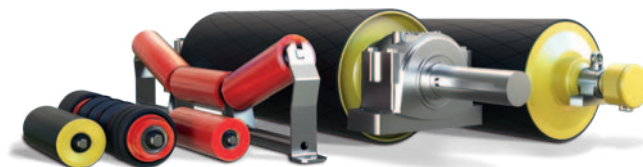
DOCKSIDER™ PNEUMATIC UNLOADERS

Model	DS1	DS2	DS3	DS4
Maximum peak/ design capacity	400 MTPH ¹	550 MTPH ¹	725 MTPH ¹	1200 MTPH ¹
Maximum vessel size	8000 DWT	45000 DWT	55000 DWT	65000 DWT
Available vacuum arm length	18 m [60'] (3-section)	37 m [123'] (3-section) 41 m [135'] (3-section)	42 m [138'] (3-section)	45m [148'] (3-section) 47 m [154'] (3-section)
Available configurations	Stationary Dock mobile Gantry mobile	Stationary Dock mobile Gantry mobile	Stationary Dock mobile Gantry mobile	Stationary Dock mobile Gantry mobile

¹ Based on Type I/II Portland Cement with the shortest available vacuum arm. Convey capacity is sized for site requirement.



PREMIUM COMPONENTS FOR MATERIAL HANDLING



Rulmeca offers a wide range of quality Rollers/Idlers, Motorized Pulleys, Pulleys and components used in the most demanding applications in belt conveyors material handling. We are close to you, whenever you need us, with a global network of sales and service centers.

 **RULMECA®**
MOVING AHEAD

Neuero Industrietechnik GmbH: advancing efficiency in cargo handling

*All photos: Neuero's
M300AL unloaders at the
Rio Tinto La Baie facility.*



Neuero Industrietechnik GmbH specializes in the design and manufacture of state-of-the-art pneumatic and mechanical ship-unloaders and loaders. Its equipment is tailored to handle a wide range of commodities, including alumina, grain, and

other bulk materials, catering to the diverse needs of its global clientèle.

RECENT PROJECTS: RIO TINTO LA BAIE, CANADA

One of Neuero's recent milestones is the

successful delivery of two Multiport A300AL pneumatic ship-unloaders for the Rio Tinto Safe & Flex project at its La Baie facility in Québec, Canada. This historic port, operating for over 80 years, manages an annual throughput of approximately



800,000 metric tonnes of alumina.

The M300AL units were specifically designed to meet Rio Tinto's stringent requirements for customized solutions, ensuring compliance with its operational standards and future scalability. Despite challenges posed by the Covid-19 pandemic, including disruptions in fabrication and assembly, Neuero's dedicated design and production teams ensured on-time delivery and exceptional quality.

The unloaders were transported almost ready for use via heavy-lift shipment from Germany to Canada. This approach dramatically reduced the need for extensive local operations and avoided interference with the facility's day-to-day business activities.

Rio Tinto's feedback highlights the success of this project: "Neuero's M300AL

unloaders exceeded our expectations, delivering above-nominal discharge rates with outstanding reliability and low operating costs. The collaboration was seamless, and Neuero's competence was evident throughout the project. Technical specifications, schedule, cost, and performance were all on or above target," said Rio Tinto, La Baie, Québec.

The Aluport A300 units also incorporate an integrated continuous scale system and are designed with future autonomous unloading operations in mind, demonstrating Neuero's commitment to innovation and adaptability.

TECHNOLOGICAL ADVANCEMENTS

Neuero continues to push the boundaries of cargo handling technology. Its latest developments focus on:

❖ Automation and digitalization:

implementing advanced control systems for enhanced operational efficiency and safety.

❖ **Energy efficiency:** designing equipment to reduce energy consumption while maintaining high throughput.

❖ **Sustainability:** developing eco-friendly solutions that minimize environmental impact, including dust suppression and noise reduction features.

MARKET LEADERSHIP AND COMPETITIVENESS

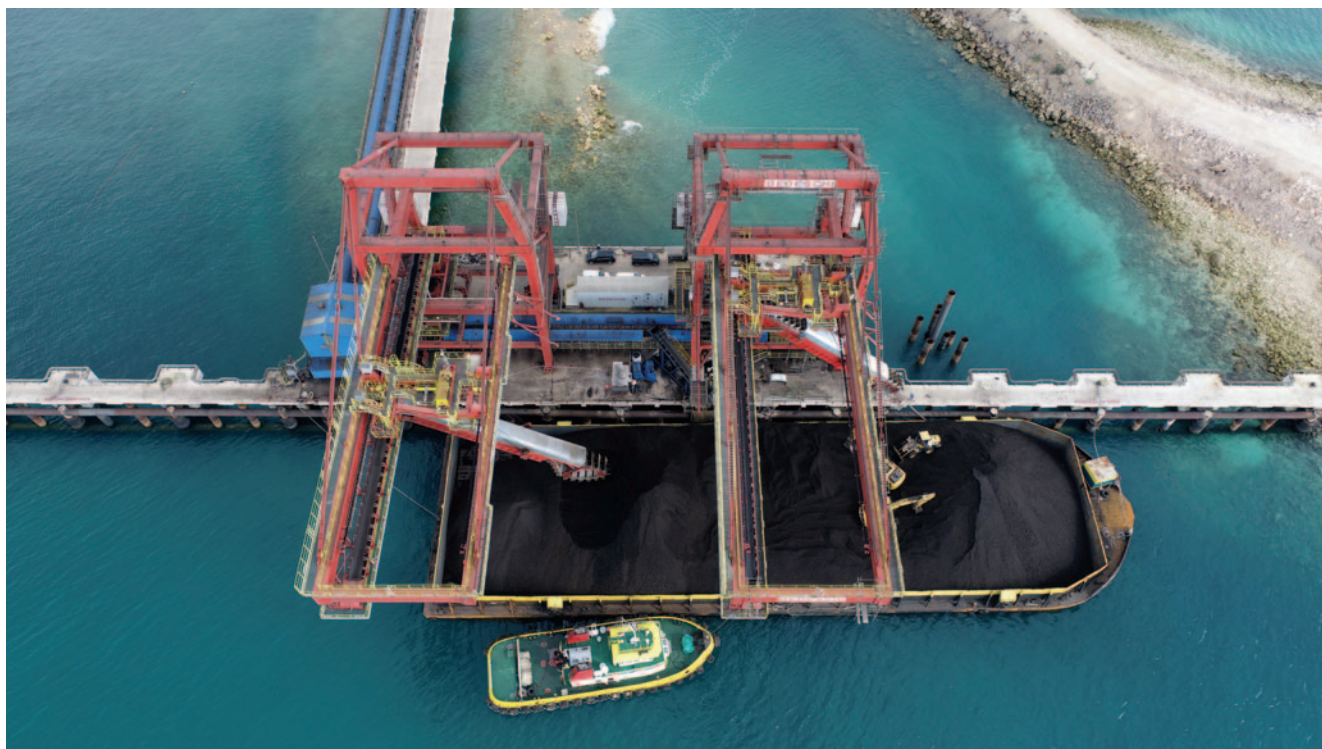
To remain at the forefront of the industry, Neuero invests heavily in research and development, fostering innovation that addresses the evolving needs of its customers. Neuero's global service network ensures prompt support and maintenance, reinforcing the company's reputation for reliability and customer satisfaction.

COMPANY BACKGROUND

Founded in 1914, Neuero Industrietechnik GmbH has a legacy of over a century in the bulk material handling industry. Its commitment to engineering excellence and customer-focused solutions has established us as a trusted partner to leading industrial players worldwide. This information provides valuable insights into Neuero's capabilities and innovations which are shaping the CSU market.



Bedeschi CSUs and CBUs for barges and vessels up to 120,000dwt



In the marine industry, the efficiency and speed of cargo handling are critical to maintaining smooth global trade operations. One of the key advancements in bulk cargo handling is the continuous ship-unloader (CSU), a highly specialized machine designed to unload large quantities of bulk materials such as coal, grain, ores, and fertilizers from ships to shore-based storage facilities.

Continuous ship-unloaders operate seamlessly, delivering a constant flow of cargo in a highly efficient and environmentally friendly manner. These machines have revolutionized how ports manage high-volume cargo, minimizing unloading time, reducing labour costs, and enhancing overall port productivity.

The development of continuous ship-unloaders represents a significant leap forward in port infrastructure, combining cutting-edge technology, engineering, and design to meet the growing demands of international shipping. This article delves into the technology behind CSUs and some of the latest applications delivered by the company.

Bedeschi can offer a wide range of mechanical ship-unloaders for barges (CBUs) and for vessels up to 120,000dwt, stationary or mobile on rails or rubber tyres with handling capacity from 100tph (tonnes per hour) to 1,500tph, as well as pneumatic ship-unloaders for vessels up to 20,000dwt, stationary or mobile on rails or rubber tires with handling capacity from 100tph to 300tph.

Ship-unloading technology has been pushed through in-house know-how growth. To complement the bucket unloaders, already part of the equipment's line, mainly applied to high-capacity handling of coal and ores, the company has added chain elevator unloaders; this technology, even if it was already part of the portfolio, has been boosted in the past years.

Thanks to the know-how gained from several successful installations worldwide and to the ongoing upgrading process by the design and R&D team, Bedeschi can offer unique, custom solutions for any technical and operational requirement.

Bedeschi's continuous chain unloaders are designed to provide exceptional performance with several key advantages. They offer the lowest power consumption, ensuring energy efficiency and minimal operational costs. This contributes to the lowest operating costs, making them a cost-effective solution for long-term use. These unloaders are known for their high reliability, delivering consistent and dependable performance even under tough conditions. Furthermore, they operate dust-free, maintaining a clean environment during unloading operations.

In the last years, Bedeschi has supplied different grain and clinker handling equipment to Ashdod Port. This equipment included three eco-hoppers, vackem belt conveyors and a continuous ship-unloader. One hopper is to discharge the clinker to the truck at up to 800tph, and two are to

discharge grain at a rate of 550tph. A filtering system prevents air pollution during filling and discharging. In the complete process flow, the two conveyors will receive grain material from Bedeschi's continuous ship-unloader under operation. This ship-unloader operates at a 1,200tph capacity and features a cutter able to unload free-flowing and non-free-flowing (meals, DDGS) materials.

To ensure operability with non-free-flowing materials, the CSU is equipped with a rotating cutter able to effectively decompact any kind of meal. Thanks to the dimensions of this device, most of the product can be unloaded without the assistance of auxiliary Bobcats/wheeled loaders, increasing safety and reducing unloading time.

The system can offload material to trucks using a twin track dust-free loading facility with a dedicated control cabin, or to a vackem belt conveyor system also supplied by Bedeschi, connecting the quay to the storage area.

The company is now installing a new machine of the same type with slightly smaller dimensions in the UK.

While the chain loader proves itself very effective when handling small sized particles (less than 25 mm), with coarser materials the continuous bucket unloader is the best option.

The approach to unload an OGV compared to a barge is very different, so are the bucket ship-unloader compared to a barge unloader. The ship-unloader has



typically luffing and slewing capabilities either for the main boom and the bucket elevator, while it is most efficient for the barges to clean the hold sweeping it transversely and with a single longitudinal pass.

In 2023 Bedeschi supplied two stationary continuous barge unloaders (CBU) to handle 1,250tph of coal from the barge to the delivery belt conveyor. The reason for having to units was to ensure the full reliability of the coal import system, not to increase the import rate.

The engineering of these machines was developed entirely in-house, and the

challenge was to study a type of machine that must work wholly synchronized with the barge towing system and take into account the unavoidable movements of the barges due the influence of the tides and waves, not to mention the changing in the draft and trimming angle of the hull while being unloaded.

The Bedeschi equipment installed shows the company commitment to supplying machines using the latest technology. These machines have been designed with the utmost flexibility and reliability in mind. The buckets can move in all directions,

allowing for versatility during unloading operations. They are also equipped to bring the excavators/payloaders inside the barge to collect the material when it remains on the corners. This design, typically manufactured as a portal type, is a county-level type.

At the discharge from their boom conveyor, the machines are also equipped with a grizzly screen to discard gross material of foreign objects (e.g steel bars), further enhancing the safety against failure of the non-redundant downstream equipment.

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Lion Bulk Handling in the age of Digital Twins: a new frontier in ship-unloaders



As industries worldwide embrace the transformative technologies of Industry 4.0, Lion Bulk Handling proudly positions itself at the forefront of innovation in ship-unloader technology with the integration of **Digital Twins**. This cutting-edge approach revolutionizes how Lion Bulk Handling monitors, operates, and optimizes its equipment, setting a new standard for efficiency, and safety in bulk material handling.

WHAT IS A DIGITAL TWIN?

A **Digital Twin** is a real-time, virtual representation of a physical asset, system, or process. In the context of bulk material handling, it serves as a digital counterpart to physical equipment, such as the manipulator arms of Lion Bulk Handling's ship-unloaders. By combining data from sensors, machine learning, and advanced simulation models, **Digital Twins** allow operators to monitor and manage their systems in unprecedented ways.

Through this virtual representation, users can simulate operations and predict potential issues — all without disrupting actual workflows. The result is a powerful tool that enhances operational decision-making, reduces downtime, and ensures maximum performance of ship-unloaders.

THE BENEFITS OF DIGITAL TWINS IN BULK HANDLING

The integration of **Digital Twins** into Lion

Bulk Handling's ship-unloader systems unlocks a wide range of benefits for the bulk material handling industry:

1. OPERATIONAL EFFICIENCY

In bulk material handling, reliability and efficiency are critical. By leveraging real-time data, **Digital Twins** simulate various operating conditions to optimize ship-unloader performance. This fine-tuning ensures faster and more effective material transfer, reducing handling time and improving overall efficiency.

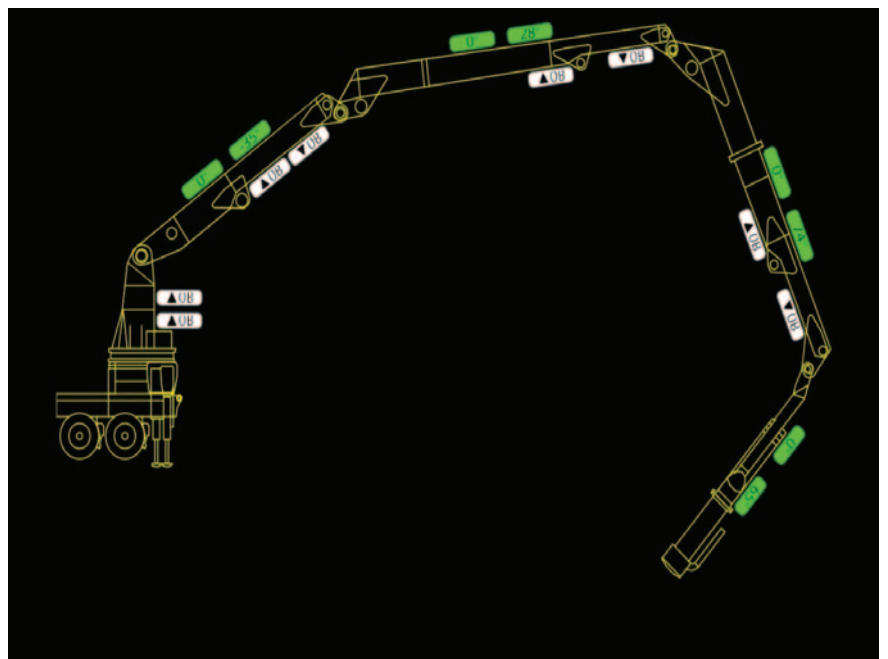
For example, operators can use the **Digital Twins** to identify bottlenecks or inefficiencies in the unloading process. These insights empower teams to adjust configurations and optimize operations,

ensuring that every moment is as productive as possible.

2. PREDICTIVE MAINTENANCE

Unplanned downtime is one of the costliest challenges in bulk handling operations. **Digital Twins** mitigate this risk by enabling predictive maintenance. Sensors embedded in the ship-unloaders continuously feed data into the virtual model, allowing it to monitor the condition of critical components in real time.

By analysing patterns and trends, the **Digital Twin** can identify early warning signs of wear or failure. Maintenance teams are alerted to potential issues before they escalate, enabling timely repairs and avoiding costly interruptions. This





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proactive approach not only extends the lifespan of equipment but also significantly reduces maintenance costs.

3. TRAINING AND SAFETY

Digital Twins provide a safe, virtual environment for operator training. Instead of learning on live equipment — where mistakes can lead to costly damage or safety risks — operators can practice using the **Digital Twin**.

This training tool replicates real-world conditions, allowing users to gain hands-on experience and confidence before working on physical systems. Moreover, **Digital Twins** enhance safety by identifying potential hazards in the unloading process. By simulating various scenarios, the technology can highlight risks and recommend mitigations, fostering a safer working environment for all.

DIGITAL TWINS AND THE FUTURE OF BULK HANDLING

The integration of **Digital Twins** is more than just a technological advancement — it represents a paradigm shift in bulk material handling. By embracing digitalization, Lion Bulk Handling is paving the way for the next generation of ship-unloaders that are not only more efficient but also more adaptable to the evolving demands.

SETTING NEW INDUSTRY STANDARDS

As a leader in the bulk handling industry, Lion Bulk Handling is committed to driving innovation. The adoption of **Digital Twins** underscores this commitment, enabling Lion Bulk Handling to offer ship-unloaders that outperform traditional systems.

A COLLABORATIVE APPROACH

The success of **Digital Twin** technology lies in its ability to integrate with other Industry 4.0 innovations, such as the Internet of Things (IoT), Artificial



Intelligence (AI), and big data analytics. Lion Bulk Handling actively collaborates with technology partners and stakeholders to ensure seamless integration and maximize the potential of these technologies.

SHAPING THE FUTURE

Looking ahead, the potential of **Digital Twins** extends beyond ship-unloaders. The technology can be applied across the entire supply chain, from port operations to material storage. By creating a connected ecosystem of digital models, the bulk handling industry can achieve unprecedented levels of efficiency and sustainability.

DRIVING INNOVATION

Lion Bulk Handling believes that innovation is the key to progress. The integration of

Digital Twins into the company's ship-unloaders marks an exciting milestone in the journey to revolutionize bulk material handling.

By harnessing the power of real-time data, simulation, and predictive analytics, Lion Bulk Handling is not only improving operational efficiency but it is also contributing to a greener, safer, and more sustainable future. As the maritime and cement sectors evolve, Lion Bulk Handling remains dedicated to leading the way with cutting-edge solutions that meet the challenges of tomorrow.

Lion Bulk Handling invites users to join it as it continues to innovate and shape the future of bulk material handling. Together, Lion Bulk Handling believes, it is possible to unlock new possibilities and redefine what's possible in the age of Industry 4.0.

Sumitomo boasts a proud history in the CSU market, dating back to 1978

Since delivering its first bucket elevator (BE) type continuous ship-unloader (CSU) in 1978, Sumitomo Heavy Industries Material Handling Systems has remained at the forefront of the industry. Through continuous innovation, its machines have consistently demonstrated high unloading efficiency and reliability, securing its position as a top player with 85 units delivered or under construction, primarily for the power generation and steel sectors. Sumitomo's success in handling challenging multi-materials like iron ore and coal with its BE type CSU has been particularly notable, earning the company significant trust from its customers.

Over the past few years, Sumitomo Heavy Industries Material Handling Systems has been delivering 1,500tph (tonnes per hour) of high-performance BE type CSU to coal-fired power plants in Japan. This equipment is highly valued by customers for its high cargo handling efficiency and has excellent reliability. It helps reduce operating costs and minimizes the burden of maintenance. Further, it improves long-term customer satisfaction, as it enables stable operation under strict operating conditions. In addition, Sumitomo's BE type CSU provides peace of mind to customers with regular maintenance and support. As a result, many domestic coal-fired power plants continue to choose Sumitomo's products, which is proof of the trust customers have in the company.

Regarding high cargo handling efficiency, the 'swing' mechanism reduces the remaining load on the bottom of the ship and minimizes the work of heavy machinery on board. Although lifting bottom cargo can lower overall efficiency, Sumitomo's BE type CSU employs this 'swing' mechanism to mitigate inefficiencies by addressing the handling challenges of bottom cargo.

In addition, the hydraulic system has a lot of consumable parts, complex mechanisms, and can have a high risk of failure, so Sumitomo's BE type CSU drives most of its functions electrically and improves serviceability. Therefore, reliability is optimized through improvements based on many previous operational performances.

The demand for screw unloaders for power plants using wood biomass as fuel is still high in Japan. As a result, Sumitomo's vertical screw type continuous unloader (VSC) has been active as its main product. With the expansion of the use of wood biomass, efficient and reliable cargo handling systems are required in power plants aiming for sustainable energy supply. Sumitomo's VSCs are especially capable of transportation and excellent durability and play an important role in supporting a stable supply of biomass fuel. Against this background, the company's products have been introduced to many power plants and are highly trusted within the industry.

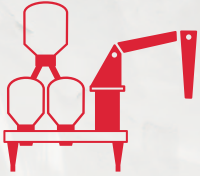
From now on, Sumitomo would like to actively provide its products not only to the domestic market but also to overseas steel and power plants. In areas where infrastructure development and environmental regulations have been strengthened, especially in Asia and Europe, the number of situations in which high-performance equipment from Sumitomo is increasing. In these markets, the company believes that the efficiency of power generation and steelmaking using coal and wood biomass is increasing, and that its technical capabilities and quality will be of great help. By expanding to overseas markets, Sumitomo intends to actively engage in sales activities with the aim of becoming a company trusted by more customers.





The answer to your bulk handling questions

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Ship loaders



Van Aalst completes ship-unloader commissioning in Bangladesh



Van Aalst Bulk Handling BV. has completed the commissioning of Crown Cements fourth Van Aalst ship-unloader in Bangladesh.

Together with its local agent and Crown Cement, Van Aalst completed the installation, carried out the training of the operators, and the new unloader passed the performance tests meeting Crown's expectations.

The new installed ship-unloader handles fly-ash and provides a continuous material discharge capacity of over 230 tonnes per hour.

This unloader is designed to operate in the hot and humid climate of Bangladesh and is equipped with so-called pneumatic suction and blowing technology whereby the fly-ash is continuously sucked out of the ship and simultaneously blown to a storage location, all with this one machine!

The suction arm offers a full reach into the corners of the cargo hold and underneath the hatch coamings reducing the barges turnaround times, increasing Crown's jetty utilization.

Crown Cement has many years of experience with Van Aalst's pneumatic equipment; it is hoped that this new unit will bring new opportunities.

Worldwide installations of Van Aalst ship-unloaders demonstrate reliable, efficient and environmentally friendly operations, eliminating spillage and dust emissions in dry bulk handling operations.

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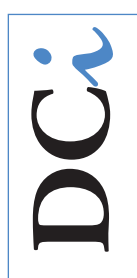
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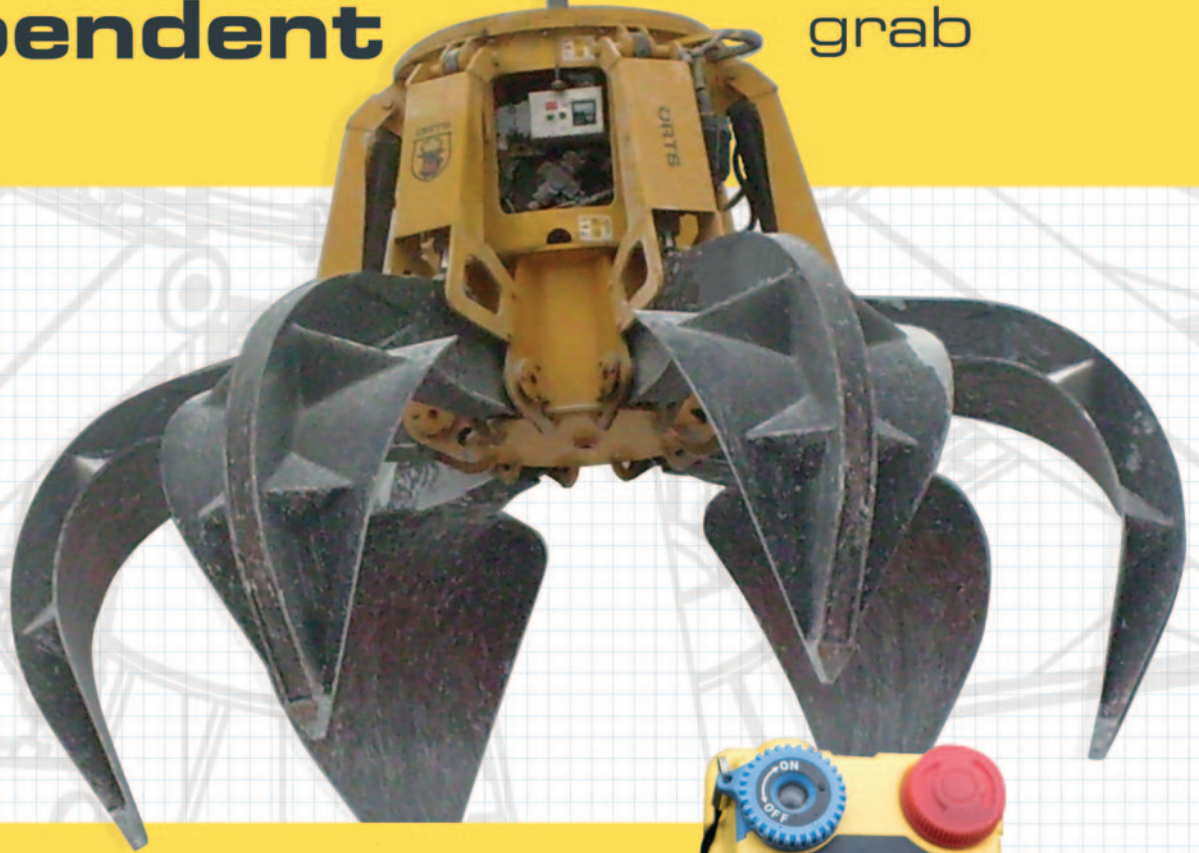
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