# Issue 41 | April 2023

# SWIRE BULK SIGNS UP TO SSI

ASSOCIATION OF BULK TERMINAL OPERATORS

Swire Bulk is the latest business to join the Sustainable Shipping Initiative (SSI), joining ambitious organisations across the maritime ecosystem in working towards a more environmentally, socially and economically sustainable shipping sector.

Headquartered in Singapore, Swire Bulk is a vessel owner and operator in the dry bulk sector, with a trading fleet of around 150 handysize and supramax vessels commercially controlled by eight global offices. The company was first founded in 2012 as a division within the China Navigation Company (CNCo) and separated from CNCo in 2021 to stand alone as the specialist bulk trading arm of the multinational Swire Group.

Swire Bulk is committed to being a leader in sustainability and to contribute to the decarbonisation journey of the maritime sector. The company has already embarked on a number of projects focusing on decarbonisation, alternative fuels, and protecting marine biodiversity as well as being a member of various industry forums. Through membership of the SSI, Swire Bulk looks forward to collaborating with leaders in sustainability across the maritime industry to support progress at a critical time.

Swire Bulk's chief executive officer, Peter Norborg, says: "As Swire Bulk continues to build and cement its standing in the dry bulk shipping sector, we continue to stay true to our Swire vision – one of which is to set standards on sustainability. Sustainability has never been more important and is always a key topic when engaging with all our customers. Being part of the SSI enables us to be part of the wider green solution, so that we can continue to deliver first-in-class services to our clients while being prudent and responsible towards the environment that we operate in. We are excited to embark on a new chapter and partnership with SSI and explore more sustainable solutions that will be fit for the future."

The Sustainable Shipping Initiative (SSI) is a multi-stakeholder initiative that brings together leading organisations with shared goals and equal determination in improving the sustainability of the shipping industry in terms of social, environmental and economic impacts. Ranging from NGOs to shipowners, charterers, banks, and classification societies, SSI members work toward the milestones laid out in the Roadmap to a sustainable shipping industry.

#### BRUKS SIWERTELL UNVEILS UNLOADERS FOR SOUTH CHINA

Bruks Siwertell has completed the commissioning of two large-scale Siwertell ST 790-D-type ship unloaders for a newly developed ultra-supercritical power station in southern China, ensuring clean and efficient coal handling for their new owners.

"The covid pandemic presented a number of challenges for the commissioning process as it was impossible to send personnel from Sweden," explains Björn Ohlsson, contract manager, Bruks Siwertell. "We had to get creative, developing a unique set-up that saw our local personnel carry out the commissioning and performance tests with remote support from Sweden.

"The whole process required us to be very flexible, not only with our approach, but also with our working hours. The result is two ship unloaders that are meeting their new owner's expectations," Ohlsson adds.

The new unloaders secure the delivery of fuel to a two-unit 1,000MW power plant development.

Siwertell screw-type ship unloaders are designed to handle coal and other dry bulk materials in the most environmentally friendly way possible, with totally enclosed conveying lines from start to finish, providing an operation free from spillage, and reducing dust emissions to a minimum.

"The proven performance of Siwertell unloaders was an important element in them being selected for this new development," notes Ohlsson. "Our technology is also much lower in weight than any equivalent capacity equipment, which minimised the load on the jetty, delivering significant cost savings in jetty construction."

In addition to their low weight, the Siwertell ship unloaders deliver market-leading through-ship capacities, which minimise berth occupancy. These new units are rail-mounted and offer a continuous rated coal handling capacity of 1,800t/h, with a peak capacity of 2,000t/h, discharging vessels of up to 100,000 dwt.

For further information about ABTO Email: info@bulkterminals.org Phone: +44 (0) 7546 978020

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#### **INDIAN COAL IMPORTS SLIDE**

Coal imports into India have fallen 25 % in the past three years as India seeks to increase domestic production and reduce dependence on imports. The fall has occurred in spite of global geopolitical turmoil, which has put a strain on supply chains and has resulted in a reliance on more traditional forms of fuel sources.

The government imported 248.54m tonnes of coal in 2019-20, which fell by 25% to 186.06 million tonnes in fiscal year 2022-23 according to Coal Ministry data.

# ECSA WELCOMES EU'S NET-ZERO INDUSTRY ACT

European shipowners, under the aegis of the European Community Shipowners' Associations (ECSA), have given their seal of approval to the EU's proposed Net-Zero Industry Act, which seeks to enhance Europe's security and to support the energy transition of European industry.

However, ECSA says: "The new Act must properly recognise the strategic role of shipping for Europe's security. The shipping industry is a cornerstone of European security: energy security, food security, security of supply of goods. This is a unique opportunity for Europe to foster the sector's competitiveness."

The new Industry Act aims to accelerate the decarbonisation of the European economy. As shipping is one of the most difficult to decarbonise sectors, the upscaling of affordable low- and zero-carbon fuels and technologies for the sector is key. For this reason, renewable fuels of non-biological origin should be included within the Act's definition of "strategic net-zero technologies", so that dedicated production capacity can be swiftly developed, the association says. In addition, ECSA warmly welcomes the inclusion of offshore renewable technologies and carbon capture and storage in the list of strategic net-zero technologies.

"European shipowners believe that the Net-Zero Industry Act can be instrumental in supporting the competitiveness of European industry while accelerating the energy transition," says ECSA's Secretary General Sotiris Raptis. "The strategic role of shipping for Europe's energy security, food security and security of supply of goods must be properly recognised. In this context, we welcome the support for the faster uptake of offshore technologies, for which shipping already plays a critical role. But the industry is still missing a clear plan for the development of a European supply chain for clean marine fuels and technologies."

#### **NEW ZEALAND UPS PORT SAFETY**

New Zealand's Port Health and Safety Leadership Group – made up of unions, ports and stevedoring companies, the Port Industry Association, Maritime NZ and WorkSafe – has released its advice to the New Zealand Minister of Transport: a multi-year port sector insights picture and action plan to make ports safer.

This follows the tragic deaths of two port workers in 2022, after which the Minister of Transport asked the Port Health and Safety Leadership Group for advice to address health and safety on ports.

The plan pulls together information from fatalities, injuries, incidents, near-misses, regulatory notifications, investigations and assessments, worker surveys, and worker interviews and workshops to build a picture of what drives serious harm on ports – who it is happening to, and why. It lays out six key interventions where changes can have a real impact:

- Implementing the Fatigue Risk Management System: Good Practice Guidelines to reduce the risks associated with worker fatigue.
- Putting in place an Approved Code of Practice around loading and unloading of cargo to implement more consistent regulatory standards in relation to some of the highest risk activities in Ports.
- Recommending the government extends the Maritime NZ designation to cover the whole port.
- Work to improve incident reporting, notifications, insights and learning across the ports, so the sector can get better real time understanding of harm and take necessary action.
- Action to improve training and workforce issues.
- Actions to ensure there are easier ways of sharing good practice that the sector is doing here, or overseas, to encourage continuous improvement on ports.

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#### TONNAGE TAX WINDOW

Following the UK Chancellor's Budget, the UK Chamber of Shipping has reacted to the news that from June 2023 for the first time in nearly 18 years, an election window for UK Tonnage Tax will open, allowing companies to enter the regime. From April 2024 third-party ship managers will also be allowed to join.

A UK Chamber of Shipping spokesperson says: "Tonnage tax in the UK supports more than 50,000 jobs in the shipping sector and hundreds of millions of pounds of tax revenue. The opening of an election window, for the first time in nearly two decades, alongside the ability for third-party ship management companies to join is welcome news and will provide companies with a long overdue opportunity to join.

"To ensure our tonnage tax regime is world leading, attracting further jobs and investment into the UK, we do need to see further reform including greater flexibility around how companies are able to opt into the regime."

# FUNDING BOOST FOR PORT OF PORT HEDLAND

Work is underway on a major project that will expand the export and import capacity at the Port of Port Hedland in Western Australia – unlocking trade and investment opportunities, creating hundreds of new jobs and helping drive Australia's net-zero future.

The Commonwealth government is investing \$565m to support common user port upgrades in the Pilbara. Part of this funding will enable the expansion of Lumsden Point in the Port of Port Hedland, in partnership with the Western Australian government – which is contributing \$96.5m to the project.

The project will deliver new multi-user facilities and berths that will help diversify trade in the Pilbara and support the growth of renewable industries in Australia and overseas.

This includes increasing the capacity to export battery metals such as lithium and copper concentrates, as well as import renewable energy infrastructure including wind turbines and blades. It will also support the rapid growth of direct shipping services to the Pilbara.

Growing the capacity of Pilbara Ports has been identified by Infrastructure Australia as a national infrastructure priority. Lumsden Point forms part of the Port of Port Hedland Development Plan Review, which was undertaken to maximise export capacity at the port.

The first stage of works on the project will construct two seawalls and a new causeway, which will connect the wharf to the proposed logistics hub. MGN Civil was awarded the contract to complete the first of the seawalls, with a tender to soon be released for the delivery of the second.

Pilbara-based businesses will benefit from the first seawall contract, with 90% of materials and suppliers to be sourced within the region, and additional sub-contracting and labour opportunities on offer. This will include partnerships with First Nations businesses and economic opportunities for communities across the north-west.

#### **HEMPEL JOINS BIOFOULING ALLIANCE**

Hempel has joined the International Maritime Organization (IMO) Global Industry Alliance (GIA) for Marine Biosafety to work with industry to support shipping's emissions reduction pathway and to mitigate against the spread of invasive species.

The GIA, created under the IMO's GloFouling Partnerships project, is a cross-sectoral platform for collaboration. Following Hempel's membership, the GIA comprises 13 private companies that work with governments, the IMO and other non-governmental organisations to increase awareness of the environmental implications and risks associated with biofouling on ships hulls, identify common issues, and foster solutions for mitigation. The alliance also informs policy developments and shares technical expertise within NGOs.

"At Hempel, we are very pleased to be joining the Global Industry Alliance (GIA) for Marine Biosafety," says Alexander Enström, executive vice president and head of marine. "We believe that strong collaboration between all stakeholders – governments, NGOs and the maritime industry – is needed to identify challenges and accelerate solutions to decarbonise the maritime industry and protect marine environments. As a provider of hull performance solutions that can help prevent the build-up of invasive species on hulls, as well as reduce the fuel usage and carbon emissions of ships, we look forward to taking part in this collaboration."

The GIA was set up as a public-private partnership by the GloFouling Partnerships project in June 2020. The project is part of the wider efforts undertaken by IMO, in collaboration with the Global Environment Facility and the United Nations Development Programme, to protect marine ecosystems from the negative effects of invasive species.

The programme is also in line with the IMO strategy to reduce greenhouse gas (GHG) emissions from shipping by at least 50% by 2050. By limiting biofouling on a ship's hull, GHG emissions are reduced and operational efficiencies can be achieved.

# **MEETING OF MINDS**

Maritime industry leaders from Denmark, Norway, Sweden and Finland recently attended classification society ABS's Northern Europe Committee meeting to hear the latest thoughts on the clean energy transition and sustainability strategies.

"With advanced solutions in technology and compliance, we are pioneering new sustainability strategies and services to help owners and operators along their decarbonisation journey," said John McDonald, ABS executive vice president and COO, at the meeting. "Thanks to our long-standing relationships and years of experience in Northern Europe, our committee includes the diverse expertise of many knowledgeable stakeholders, which provides powerful insight to keep our industry in the forefront of the clean energy transition."

Patrick Ryan, ABS Chief technology officer and senior vice president, delivered a comprehensive presentation

on the wave of innovation and new technologies that are having an impact on the industry. Ryan reviewed three focus areas: digitalisation, applied research, and the clean energy transition, each encompassing several technologies – such as artificial intelligence, modelling and simulation and nuclear power – that are poised to revolutionise the marine and offshore industries.

Committee members also heard details of ABS's industry-leading safety performance, the latest regulatory developments and market trends that were shared by ABS specialists.

"ABS brings us together to strengthen our cooperation and explore solutions in today's unique and challenging landscape. This meeting is always a valuable forum for ideas, and I am happy to offer my support as chairman of this distinguished group of leaders. We look forward to more opportunities like this to share knowledge together," said Palle Laursen, Chairman of ABS' Northern Europe Regional Committee.

#### **CALL FOR OCEAN INDUSTRY COLLABORATION**

The collaboration between ocean industries will need to intensify for the rapid buildout of offshore wind and aquaculture to coexist sustainably with other industries and the ecosystem. According to DNV's Spatial Competition Forecast, the amount of ocean space occupied by installations will grow five-fold by 2050. This will be driven by offshore wind, which will account for 80% of stationary infrastructure at sea by midcentury, followed by aquaculture (13%) and oil and gas (5%).

While ocean space is plentiful, industrial activity will be located primarily close to shore, which will heighten the need for ocean coexistence. To enable stakeholders to gauge the demand for ocean space, DNV has developed the Spatial Competition Index. According to this index, the North Sea is the area in Europe which will see greatest competition due to the large number of shipping lanes and ports, as well as the strong presences of the fishing, aquaculture, oil and gas and wind industries.

Greater China's emergence as the powerhouse of the blue economy is reflected in offshore construction. It will account for a third of all global infrastructure built at sea by 2050, mainly due to the sharp increase in offshore wind, which will make up 13% of the region's electricity production.

The Indian Subcontinent sees the strongest growth in area covered by stationary infrastructure, as the region experiences fast offshore wind development requiring vast areas, whereas historically, offshore oil and gas and marine aquaculture are negligible in this region.

Globally, the area occupied by fixed offshore wind will grow from about 9,000km<sup>2</sup> today to about 242,000km<sup>2</sup> by mid-century. Floating offshore wind will grow from a low 15km<sup>2</sup> today to more than 33,000km<sup>2</sup> by 2050. Compared with bottom-grounded installations, floating offshore wind can potentially ease some of the tensions between offshore wind and fisheries, as it takes renewable energy production out of the way of the fishing fleet operating on shallow banks.

"The ocean is crucial for the production of sustainable food and energy, but at the same time we must tread carefully as many ocean ecosystems are already under huge stress," says Bente Pretlove, Ocean Space programme director at DNV. "This report underscores the urgent need to balance protection, productivity, and social development objectives for a sustainable Blue Economy. Those developers that are most adept at early stakeholder engagement, spatial efficiency, flexible coexistence, and pursuit of sustainability are likely to be most competitive. Coexistence is essential for the sustainable growth of the Blue Economy."

# BULK TERMINALS LISBON 2023 THE ONLY EVENT AIMED AT THE ENTIRE BULK TERMINALS INDUSTRY

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The 2023 conference will set the scene with the traditional analysis of bulk markets, continuing with a full programme focused on the concerns of operators – offering sound practical solutions to terminal operators for improving safety, streamlining operations and ensuring environmental protection.

The conflict in Ukraine had a serious impact throughout 2022 on bulk trade flows. This will undoubtedly continue this year. And while the world may be opening up, the effects of covid-19 will continue to affect global supply chains. Lisbon will examine the impact of both on bulk terminal operations – both short term and in the future.

#### Port and local organiser



To discuss speaking and sponsorship opportunities please call Simon Gutteridge +33 (0)321 47 72 19 or email events@bulkterminals.org



# For more details and to register, visit: bulkterminals.org/index.php/events

# ABS JOINS UP WITH KEY KOREAN SHIPYARDS

Classification society ABS is leading a project that aims to advance the shipbuilding industry's decarbonisation efforts with a joint development project (JDP) involving all the leading Korean shipyards plus classification group Korean Register to address a growing need in the calculation of greenhouse gas (GHG) Scope 3 emissions.

With key Korean shipyards HD Hyundai Group, Korea Shipbuilding and Offshore Engineering , Hyundai Heavy

Industries, Hyundai Mipo Dockyard, Hyundai Samho Heavy Industries, Samsung Heavy Industries, and Daewoo Shipbuilding and Marine Engineering, the JDP aims to create a standardised approach that could potentially apply across the whole industry.

Scope 3 in the shipbuilding industry includes GHG-generated emissions at all stages of the process from procurement of raw materials to ship operations and final disposal – in addition to GHG (Scopes 1 and 2) directly and indirectly emitted during the shipbuilding process.

#### **GUIDELINES ON MARINE CASUALTY CLAIMS**

The International Group of P&I Club's Salvage Committee have drafted new guidelines jointly with the Joint Marine Claims Committee (JMCC) to help improve collaboration in the handling of shipping casualties.

The protocol document seeks to promote more effective communication between the parties involved that will ensure the prompt deployment of emergency responses services to vessels in distress.

Amy Dallaway, who chairs the JMCC, says: "There is clearly a huge benefit to all parties by having effective early engagement between insurers and shipowners involved in major casualties, particularly where pressing decisions are required. There are many advantages in understanding the concerns of all interested parties and this collaborative approach will result in clearer lines of communication and will assist in the efficient management of claims."

The Guidelines for casualty liaison between the JMCC and the International Group establish a high-level structure to facilitate initial contact between London Market underwriters and individual P&I clubs. They also outline minimum details that should be sought for each case.

Ben Harris, who chairs the IG Salvage Committee, says: "The guidelines are an important step forward, providing a clear framework for property underwriters and the International Group of P&I Clubs to work closely together in the interest of the assured in a casualty situation. By sharing information and knowledge we can ensure that all stakeholders are aware of what is happening and to the extent possible, there is joined up decision making that avoids delay and ensures the best possible response to a casualty, especially where there is a risk to life, property and the environment."

Copies of the guidelines are available here.

# FUELTRUST LINKS WITH RIDGEBURY TO REDUCE EMISSIONS

Technology company FuelTrust has announced results of its work with Ridgebury Tankers to validate emissions reductions for its fleet. Using FuelTrust's AI technology, Ridgebury has established a carbon baseline for its Suezmax tanker, *Ridgebury John Zipser*, and assessed improvements in the vessel's performance following a retrofit in 2019, demonstrating return on an investment in scrubbers as well as carbon savings.

Ridgebury appointed FuelTrust to assess fuel and operations data from past years for the tanker, comparing month-by-month and year-by-year performance to establish a baseline for carbon emissions, from which it could measure vessel improvements. The analysis also showed the value of a scrubber retrofit for the vessel and the impact of HFO fuel quality on carbon emissions. Analysis using FuelTrust's AI-based Carbon Baseline solution has helped Ridgebury to understand, to the kilogram, the entire emissions stack of the vessel, covering CO2, NOx, SOx, criteria air pollutants and hazardous air pollutants emissions. At low cost, Ridgebury has been able to analyse the effects on vessel performance of installing a scrubber, a silicone hull coating, and buying higher quality fuels.

FuelTrust uses artificial intelligence technology to trace the links between fuel bunkers at source, through combustion and subsequently emissions. This provides information on issues such as quality, density, greenhouse gas emissions and the provenance of fuel. In an opaque bunkering market, where carbon emissions reports have been based on generalised estimates, FuelTrust's AI analyses the chemical interactions that take place during onboard combustion to accurately report emissions. DESIGNED TO HELP DELEGATES IDENTIFY AND RESOLVE COMMON PROBLEMS WHEN HANDLING VARIOUS BIOMASS MATERIALS



# **BIDMASS OPERATIONS AND HANDLING TECHNOLOGIES** SHORT COURSE – ONLINE

# Subjects covered include:

- » Material types, flow properties and handling equipment requirements
- » Self-heating, fire, explosion and safety
- » Dust and degradation, pneumatic conveying and wear
- » Dust control and management
- » Explosion protection and ATEX regulations
- Engineering of equipment for storage and discharge
- » Ship unloading
- » Biomass potential and possible future trends





The Wolfson Centre for Bulk Solids Handling Technology

## INTERNATIONAL ANTI-FOULING CONFERENCE RETURNS

I-Tech AB, the developers of the antifouling biotechnology for marine coatings, Selektope and Research Institutes of Sweden will host the International Antifouling Conference in Gothenburg for a second year, following demands for its return as one of the key platforms for antifouling coating experts, academia and end users to discuss challenges, solutions, and approaches towards marine biofouling prevention.

Markus Hoffmann, Technical Director at I-Tech comments: "This conference provides a much-needed platform for the R&D community from the marine coatings sector to meet, with the bonus that academia and end users participate and provide their vital insights. Having a platform to discuss and gain inspiration from learning about novel solutions to ensure coatings are reliable and as high performance as possible is particularly important at this moment in time."

The International Antifouling Conference 2023 will be held on September 13-14 in the Eriksberg shipyard area in Gothenburg, Sweden.

For more information about the International Antifouling Conference 2023, click here.

# HARWICH HAVEN SIGNS UP KONGSBERG

Harwich Haven Authority has awarded a contract to Kongsberg Norcontrol for the supply, commissioning and support of a Vessel Traffic Services (VTS) system and a Port Management Information System (PMIS). The VTS system is based on Kongsberg Norcontrol's seventhgeneration VTS system that is currently in service with ports around the world. In combination with their fully integrated PMIS this will ensure vessels visiting the Haven are managed both efficiently and safely.

"The Authority is very focused on meeting our customers' requirements, not only current VTS and PMIS requirements, but also has an ambitious and innovative vision for future requirements such as e-navigation and autonomous shipping; Kongsberg Norcontrol shares that vision and ambition and has the required capability and potential for growth," says Sarah West, chief executive officer, Harwich Haven Authority.

Steve Guest, managing director, Kongsberg Norcontrol comments: "Robust tracking of such a diverse mix and size of ship types within the Haven is fundamental to any VTS system and requires smart tracking and sensor fusion algorithms using all available tracking sensors, especially radar. Our seventh generation C-Scope VTS system excels in this respect and ensures that VTS operators are provided the right information, at the right time for informed decision making. The decision support tools provided are highly configurable and ensures only meaningful alerts are provided."

Nick Lambert, head of business systems, Harwich Haven Authority identified compliance to the Network and Information Systems (NIS) Regulations as a critical success factor for the project.

Kongsberg Maritime recently signed a repeat order from client Grimaldi Group to supply engineering and technology for two new 7800-line metre Ro-Ro vessels, which will be built at China Merchant Jinling Shipyard.

## **UK PORTS CONFERENCE 2023**

Industry leaders will convene on 24-25 May to discuss innovative growth strategies, as well as provide essential updates for the ports sector.

The annual UK Ports Conference 2023, which returns for its 15th year with keynote addresses from industry and policymakers, will take place at Congress Centre in London. The key themes to be explored at this year's conference will be implementing growth strategies – the areas for expansion, and how to deliver infrastructure to support these and maximise opportunities in new digital technologies.

Support for energy development is an issue of particular importance as the country looks to bolster energy security in light of soaring energy prices over the past 12 months, triggered by the war in Ukraine. Industry leaders in this field will explore energy development in the likes of offshore wind and hydrogen, as well as examine pathways to decarbonisation and net zero.

The event is an essential update for the ports sector, providing insight on changing trends, and how ports need to respond to these to maximise growth opportunities. It will provide the perfect opportunity for industry leaders to debate how best to respond to the greatest challenges facing the sector, including workforce challenges, supply chain constraints and logistical issues.

The two-day event will be chaired by Richard Ballantyne, chief executive at British Ports Association. For more information and to register for the 15th UK Ports Conference 2023, visit the event website here.

# U-SHAPE CONVEYOR FOR MORE EFFICIENCY AND SUSTAINABILITY IN PORT TERMINALS

The demand for bulk goods such as grain or fertiliser is increasing world-wide. And even the demand for coal is increasing, at least in the short term, but probably decreasing in the long term. This means that bulk terminals at ports are in a constant state of flux. In order to handle these volumes efficiently, port terminals must be able to expand again and again. This means that operators are faced with the challenge of integrating new storage areas, which are not always located in the immediate vicinity of the port. Trucks are often used for transport. They can be used flexibly depending on demand. However, the environmental impact and the operating costs for maintenance and fuel, for example, are significant. The more material that needs to be transported, the more trips are required.

An ecological and environmentally friendly alternative to truck transport is represented by the belt conveying systems. Owners can automate processes and thus relieve personnel from manual work. This solution also reduces the consumption of energy. A further advantage is that a belt conveyor enables the transport of very different materials to and from the port. At this regard, BEUMER Group offers different solutions depending on the application. The troughed belt conveyors allow high mass flows even in case of heavy and robust materials. Their open design makes them suitable for coarse materials and very large volumes. The pipe conveyors on the contrary present other specific advantages. The idlers form the belt to a closed tube protecting the material transported against external influences and the environment from emissions such as material loss, dust or odours. Partition plates with hexagonal cuts and idlers in staggered arrangement keep the tube shape closed. The pipe conveyors allow the implementation of narrower curve radii and larger angles of inclination than open troughed belt conveyors.

However, requirements are continuously increasing: On the one hand, the quantities of bulk materials are growing and on the other hand, for environmental reasons, they have to reach their destination with little dust and noise. In addition. there is often a complex routing. BEUMER Group has developed the U-shape conveyor for this purpose. In this solution, a special idler configuration brings the belt in a u-shape. Thus, the bulk material reaches the discharge station. An idler configuration similar to that for the troughed belt conveyor is used for opening the belt. Unique feature of this solution: It brings together the advantages of open troughed belt conveyors and closed pipe conveyors. The material conveyed is protected against external influences such as wind, rain or snow and the environment against possible material loss and dust. This conveying solution is suitable for coarse but also for very fine material. BEUMER Group is thus expanding the options for offering the best solution for bulk material transport, depending on the project.



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# General bulk materials handling:

- » Overview of Particulate Handling Technology
- » Port and Terminal Operations for Bulk Cargoes
- » Measurement of the Properties and Bulk Behaviour of Particulate Materials
- » Dust Control in Processes

#### Storage of Bulk Materials:

- » Storage and Discharge of Powders and Bulk Solids
- » Design of Equipment for Storing and Handling Bulk Materials
- » Biomass Handling, Feeding and Storage (can be adapted to other materials such as waste, recycled goods, pellets)

## Specialist areas of concern:

- » Caking and Lump Formation in Powders and Bulk Solids
- $\,\,{}^{\,\,}$  Undesired De-blending and Separation in Processes
- and Equipment
- » Electrostatics in Powder Handling
- » Numerical Modelling of Solids Handling and Processing
- » Powder Handling and Flow for Additive Manufacturing

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