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The world's leading and only monthly magazine for the dry bulk industry

Dust control at the transfer point lowers visibility and air quality and fouls every surface and piece of equipment.

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Clearing the air

Environmental bulk handling

Jay Venter

Martin Engineering helps control dust emissions at conveyor transfer points

INTERVIEWEE: DANIEL MARSHALL, PROCESS ENGINEER, MARTIN ENGINEERING

INTRODUCTION

How many individual belt conveyor belts does your bulk commodity touch before reaching the final production phase where it no longer sheds dust? For a limestone quarry connected to a cement plant, that might be around one to ten. For a coal mine delivering product to a faraway power plant, from extraction to the furnace, using a truck, rail and port terminal transport system, it could be up to 100 conveyors.

Regardless of how many conveyors the material experiences, each time it is transferred, there is a potential for hazardous dust emissions creating serious workplace air quality issues that could result in compliance violations. Moreover, fugitive dust can foul moving parts such as machinery and rollers, leading to excessive maintenance and raising the cost of operation.

Regulatory agencies worldwide cite dust as the major source of chronic illness and reduced mortality among workers particularly respirable crystalline silica (RCS) dust. In response, Martin

Engineering's Center for Innovation is constantly observing bulk handling operations and rethinking old designs to improve safety, production and efficiency. The goal is to reduce dust, spillage and carryback resulting in more compliant operations that are safer to maintain and

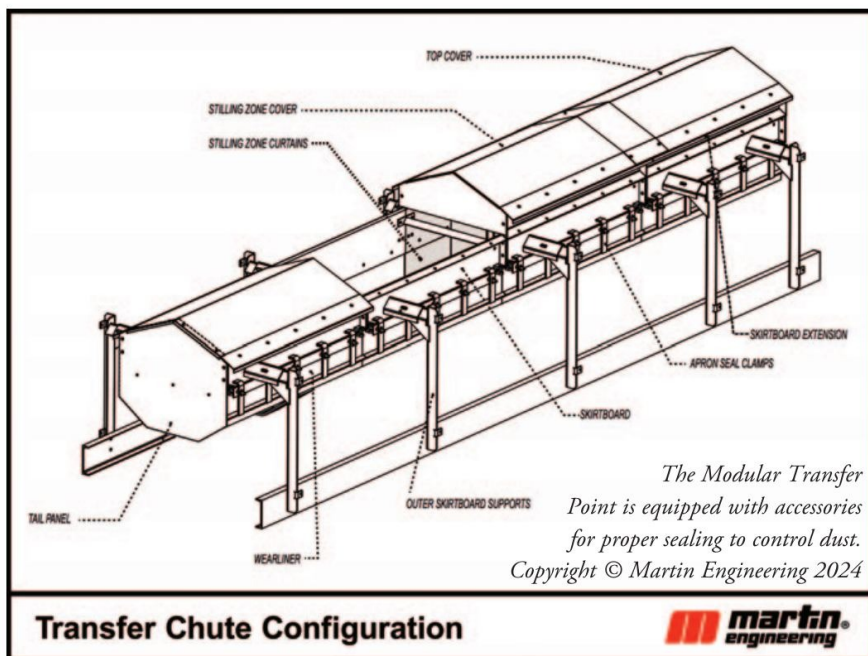
last longer with a calculable return on investment.

Q - WHO ARE YOUR MAJOR CLIENTS?

Our products are present in nearly every bulk handling operation that uses belt conveyors across the globe, from cement



The revolutionary Martin® CleanScape® extends equipment life over standard blades and eliminates the need for retensioning.
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comprehensive conveyor safety training programs in the industry. Many of our business units also offer service contracts that ensure trained and experienced experts perform maintenance and installations in a safe and compliant manner.

Innovations in dust mitigation technology are a priority for us. In 2023, Martin introduced the Modular Transfer Point Kit designed to reduce dust emissions at conveyor transfer points. Being modular allows it to economically grow with the changing production demands. Acting as an engineering control for dust emissions, the enclosure is accompanied by several belt sealing modernizations, such as the Martin® Apronseal™ Skirting, the Martin® External Wear Liner, Martin® Dust Curtains and the Martin® Tail Sealing Box.

production to mines to ports. Many major ports and terminals use Martin Engineering conveyor belt cleaners. Maritime conveyor systems can loom stories above the dock to reach the cargo bays of some of the largest river- and ocean-faring vessels. The height along with windy conditions makes proper belt cleaning essential so to avoid carryback.

If not properly cleaned by primary and secondary cleaners, dust and fines clinging to the belt or lodged in cracks and divots can fall along the return belt path. When conveyors are up high, these dust emissions can travel for long distances past the site line and reduce the air quality for neighbours and local communities. Issues with carryback from elevated systems

aren't limited to just maritime. Tall conveyors are also found in silo loading, cement towers, and raw material storage. By matching the correct cleaner to the properties of the application, dust from carryback can be drastically reduced.

Q – HOW IS MARTIN ENGINEERING REMAINING COMPETITIVE IN THE MARKET?

Innovation and customer service. This year the company is not only celebrating its 80th year, but also 50 years of the invention of the air cannon, which significantly improved material flow and workplace safety by mitigating clogs in traditional bulk handling choke points like cement preheaters, silos, hoppers and bins. We offer the most extensive and

Q – WHAT ARE SOME KEY TAKEAWAYS YOU WOULD LIKE READERS TO KNOW ABOUT DUST EMISSIONS?

Martin Engineering has, from its inception, been laser focused on workplace safety. The company's introduction of the first industrial vibrator kept workers from having to go through the extremely dangerous task of manually clearing clogs. Martin designers have since ensured that every new component introduced to the market fulfills a safety need. Dust emissions are no exception with the introduction of the Martin® Conveyor Cradle Systems which eliminate dust emitting gaps associated with standard idlers.

The obvious detriment caused by particulate emissions is to the health of



Martin® Cradles ensure a tight skirting seal and are linked by transition idlers for efficient low dust operation. Copyright © Martin Engineering 2024

workers and the surrounding community, however, there are several other associated workplace hazards. Cleanup can often expose workers to a moving conveyor belt, leading to incidental contact and entrapment injuries. Dust can also cause rolling and mechanical components to seize or break. General air quality and visibility from dust is an ongoing issue for many operations. Dust obscures lighting, covers safety signage and limits supervisors' abilities to perform ongoing inspections of system health. Reducing dust emissions limits maintenance time and worker exposure to the system, as well as lowers the cost of operation from both a labor and equipment replacement standpoint.

The key to stopping excessive dust emissions is recognizing the causes. Martin Engineering experts are trained to identify factors in the system design and application that can lead to dust violations and offer economical solutions.

ABOUT MARTIN ENGINEERING

Martin Engineering has been a global innovator in the bulk material handling

industry for more than 80 years, developing new solutions to common problems and participating in industry organizations to improve safety and productivity. The company's series of Foundations books is an internationally recognized resource for safety, maintenance and operations training — with more than 22,000 print copies in circulation around the world. The 500+ page reference books are available in several languages and have been downloaded thousands of times as free PDFs from the Martin website. Martin Engineering products, sales, service and training are available from 17 factory-



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Martin Engineering.*

owned facilities worldwide, with wholly owned business units in Australia, Brazil, China, Colombia, France, Germany, India, Indonesia, Italy, Malaysia, Mexico, Peru, Spain, South Africa, Turkey, the USA and UK. The firm employs more than 1,000 people, approximately 400 of whom hold advanced degrees.

About the Author

Daniel Marshall received his Bachelor of Science degree in Mechanical Engineering from Northern Arizona University. With nearly 20 years at Martin Engineering, Dan has been instrumental in the development and promotion of multiple belt conveyor products. He is widely known for his work in dust suppression and considered a leading expert in this area. A prolific writer, Dan has published over two dozen articles covering various topics for the belt conveyor industry; he has presented at more than fifteen conferences and is sought after for his expertise and advice. He was also one of the principal authors of Martin's FOUNDATIONS™ The Practical Resource for Cleaner, Safer, and More Productive Dust & Material Control, Fourth Edition, widely used as one of the main learning textbooks for conveyor operation and maintenance.

Klaipėda Port receives PERS certificate – and joins the club of the most environmentally friendly ports

Klaipėda Port is the first port in the Baltic States and one of the 35 ports in Europe to be certified under the Port Environmental Review System (PERS). A certificate confirming that Klaipėda Port can be called an environmentally friendly port was officially awarded at the annual event of the European Sea Ports Organisation in Paris, which took place on 25–26 April.

“An environmentally and human-friendly port: from vision to action. That's what I would call our sustainability journey of recent years. In 2020, we ignited the conversation about creating a green port, encouraging companies operating within the port to join us. Today, we are not only spearheading compelling and innovative projects in digitalization, environmental initiatives, and energy transformation, but also witnessing investments from the port's stevedoring companies towards implementing emission reduction projects. The award of this certificate to the Klaipėda Port proves that we are taking firm steps on our sustainability journey. Now we have to work to keep it, because this document is not just a nice piece of paper,” said Algis Latakas, Director General of the Klaipėda State Seaport Authority.

The implementation of the port environmental review system started in

2023, with the setting of objectives, targets and environmental performance indicators, an assessment of compliance with legal requirements, and a performance improvement plan. The set indicators will now become the benchmark against which the port's progress in reducing the environmental impact of its operations and achieving climate neutrality will be measured in two years' time.

“The PERS certificate commits us to long-term sustainable development and to playing an active role in reducing our environmental impact. Our key environmental performance indicators include reductions in greenhouse gas (GHG) emissions, air emissions from ship movements and cargo transport, energy consumption, and the number of environmental incidents in port areas. There are 34 such indicators in total,” said Aistė Kubiliūtė, Environmental Coordinator at the Klaipėda State Seaport Authority.

The certification documents were assessed by Lloyd's Register Quality Assurance (LRQA). Their conclusion is that the Klaipėda Port environmental strategy meets the requirements of the PERS and provides for the reduction of the negative impacts of the port's activities



through the implementation and application of best management practices and the latest technologies, with a preference for renewable energy sources and energy-efficient technologies. According to the certification company, the Klaipėda Port is committed to the principles of the circular economy.

PERS (Port Environmental Review System) is the only environmental management standard for seaports. It is based on ESPO (European Sea ports Organisation) policy guidelines and a tailor-made scheme to help ports comply with legislation, develop sustainable port activities, protect the environment, improve public health and tackle climate challenges. ESPO has prepared guidelines for the implementation of a port environmental management system.

The certificate is issued for two years.