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A CLEAN WINNER

Dave Mueller, conveyor products manager, Martin Engineering, explains why CleanScrape offers a low maintenance and reliable conveyor belt cleaner, providing up to four times the equipment life of conventional cleaners

TALL CONVEYOR SYSTEMS AT PORTS AND TERMINALS CAN POSE A SAFETY CHALLENGE FOR MAINTENANCE ALL PHOTOS © Ó MARTIN ENGINEERING 2023

Ports and terminals employ stacker conveyors, tripper conveyors, and some of the tallest conveyor discharge points in the world to load the cargo holds of massive dry bulk carriers. If the belts of these tall conveyors are not adequately cleaned, material can cling to the belt and drop off on the return, causing spillage and dust to spread over a wide area.

In belt cleaning, blade tensioning and wear are the traits operators monitor closest. With various types of cargo passing through the terminal, conveyor belt cleaners (aka "scrapers") should be able to handle the most punishing material to avoid wearing prematurely. Tensioning controls the pressure the blade puts on the belt, which affects the amount of carryback the blade removes. Over-tensioning can cause the blade and belt to wear prematurely, increase the frictional heat and static (a potential fire hazard) and run the risk of a pull-through or detachment leading to belt damage.

CLEANSCRAPE'S INNOVATIVE DESIGN TAKES UP LESS ROOM THAN SOME OTHER PRIMARY CLEANERS

SPILLAGE ALONG THE SYSTEM BECAME A COSTLY ISSUE TO ADDRESS.

THE CLEANSCRAPE RUNS NEARLY THE ENTIRE WIDTH OF THE BELT AND PULLEY

The height can limit access for workers to monitor and maintain belt cleaners, so it is important to find a cleaner that reliably cleans the belt, limits blade replacement and requires no tensioning. CleanScrape® is the only blade on the market that fulfills those criteria.

With low maintenance and up to four times the equipment life of conventional cleaners, CleanScrape is quickly becoming the standard cleaner for many operations. The unique design incorporates a matrix of tungsten carbide scrapers available in three different carbide metal grades to suit specific materials and belt structures. The blade is tensioned lightly against the belt to prevent damage to the belt or splices. Despite extremely low contact pressure between the belt and the cleaner, it has been shown to remove as much as 95% of potential carryback material.

Installed diagonally across the discharge pulley, the CleanScrape forms a three-dimensional curve beneath the discharge area that conforms to the pulley's shape, covering drum diameters from 300-2,000mm and belt widths from 400-3,000 mm with belts speeds up to 7.5 m/s.

Improved performance, less spillage, longer equipment life and easier maintenance reduce the labour needed for cleanup. Less staff exposure to the equipment means a safer operation and allows them to concentrate on other parts of the terminal, improving efficiency and lowering the cost of operation.

CASE STUDY: TRANSNET PORT TERMINALS, SOUTH AFRICA

Transnet Port Terminal at Richards Bay is one of South Africa's largest ports. Eight of its conveyors transporting raw materials such as magnetite, chrome, coal, chloride and zircon were experiencing excessive spillage at the discharge zones. Fines were adhering to the 1,350mm to 1,500mm belts causing carryback to spill along the belt path, pile underneath the system and spill out into walkways.

Along with product loss, workers would have to be pulled from other duties to clean up under and around the system. Several different brands of primary and secondary cleaners were installed in an attempt to mitigate the problem, but they were unsuccessful.

Technicians from Martin Engineering South Africa were invited to inspect the system and resolve the spillage issue. Due to the varying nature of the material, technicians tested a CleanScrape Primary Cleaner. The cleaner was tensioned once upon installation, then required no further adjustment.

The CleanScrape delivered superior performance and lasted considerably longer than previous blades during testing, so managers installed units on all eight belts.

Operators report that spillage along the length of the systems has been drastically reduced and no longer piles up around the conveyor structures. The material discharge efficiency has improved production and eased maintenance requirements, giving operators more control over labour costs, while reducing the need to perform potentially hazardous cleaning near the moving conveyor.

"There has been a huge improvement in the amount of spillage since the scrapers were installed," says a manager close to the project. "As a result, we will be installing more CleanScrape units to improve efficiency for the entire operation."

Dave Mueller is a long-time employee of Martin Engineering, having started his career with the company in 1986, and has since established himself as an expert in conveyor accessories. A graduate of Penn Foster College in the US with a BA in Business Management, he has 10 years in research and development on conveyor products, 26 years as conveyor product manager, is a prolific contributor of articles and has several patents.