Let the Good Times Roll

Retrofittable, high density polyethylene idler rolls reduce maintenance and operating costs.

Anyone who's manned a maintenance crew knows the headaches and costly downtime involved in replacing even one, typical worn idler roll – so much so that the questionable component is often conveniently ignored – that is until it seizes, causes tracking issues and belt damage, and brings production to a halt. But even those who proactively approach roll changes still manage to meet up with maintenance woes. Clay Wittwer, plant manager for Seven Points Sand & Gravel, is all too familiar with the latter as his former plant operated with traditional steel idler rolls. "Sand is the biggest enemy to steel rolls. It gets into the bearing and just eats it apart," Wittwer says. His workers grappled with weekly roll changeouts, but often couldn't keep up with demand. "If we didn't catch one in time, the sharp points on the worn roll would catch on the clips, tear them apart, and cause a rip all the way down the belt – and that is an expensive problem," he says, stressing that "belts aren't all that easy to come by, so the operation would easily be down a day or more" – a certain calamity for an operation with round-the-clock loadouts.

So when Seven Points planned an upgrade to a new 400-tph wash plant at its Ennis, Texas-based location, a careful consideration of conveyor components topped the to-do list. After consulting with McCourt & Sons Equipment, Inc., a dealer for Superior Industries, Wittwer and his team chose to abandon traditional steel rolls. "That decision alone is one of the biggest keys to our current efficiency," Wittwer says, referring to his switch to Superior Industries' Moxie™ rolls. These retrofittable idler rolls are designed with a specially formulated high density polyethylene (HDPE) material that is highly corrosion resistant and sheds material quickly. When combined with a seal design that protects against bearing damage, this HDPE roll offers extended wear life and greatly reduces the frequency of roll replacement due to bearing failure and shell wear, say Superior Industries' engineers. For Wittwer and his crew, the HDPE idler roll is indeed very good news.

HDPE Roll Design Advantages

Proper seal design is the major factor in wear life, especially in sand and gravel applications, as the seal is typically the first fail point. Jarrod Felton, chief engineer of standard products for Superior Industries, says that new seal design technology traps and ejects contaminants to prevent bearing damage. For example, he says, the SpinGuard® Seal System on the Moxie roll involves triple labyrinth seals that increase the distance that contaminants must travel; grease fills that easily trap contaminants; and a contact seal that results in less seal drag than other contact-type seals. Additionally, this type of seal design combined with HDPE material produces a very low roll resistance, which cuts horse power requirements – and operating costs.

As to shell wear, Felton says that buyers should be aware that there are many grades of HDPE materials – from low quality regrinds and recycled plastic all the way up to ultra high molecular weight (UHMW) material, which is a very dense plastic that is often used in wear pads. "Our Moxie roll is comprised of an HDPE material that is close to UHMW, but not quite as dense. Generally speaking, this HDPE material in a half-inch thickness, has been known to resist abrasion and wear to a greater degree than that of the 9-gauge steel used in the same CEMA C class of steel idlers," says Felton, adding that wear life is always dependent upon a number of factors which may include material type, load weight, and operating speed.

Importantly, the proper HDPE roll is a solution to the typical problems caused by material buildup and corrosion when using traditional steel return rolls, says Felton. "Due to the lubricity of HDPE, the roll sheds sticky material far better than steel, which is prone to forming areas of buildup on the return roll that leads to belt misalignment and tracking issues," he says. "As to corrosion, if it's not steel, it's not going to rust. If an operation is handling a highly corrosive material, such as salt or sulfur, we do offer the option of going with a stainless steel shaft on the Moxie roll, and that would definitely be a top choice in a corrosion-resistant product," Felton says.

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Weight is also a big issue, especially regarding the larger roll widths, says Felton. “The weight of the HDPE roll is up to 50-percent lighter than the steel roll – and the longer the roll, the more concern about weight, and the risk of back injury to workers. For example, when one is changing out a 60-inch-belt-width return roll, that’s where the crew will see a significant advantage of the HDPE roll over the steel roll. The HDPE unit is so much lighter – one worker can handle it versus two – and that is a huge advantage,” he says.

Another factor is noise control, especially in operations within city limits or those near residential areas. “HDPE rolls create far less noise than steel rolls as rocks impact the belt and as the belt and its splices reverberate over the roll. If noise is a major concern for a facility, the operator should consider chevron wing pulleys in conjunction with HDPE rolls,” says Felton.

As to one of the biggest misconceptions regarding the Moxie roll particularly, Felton says that many assume that it will be considerably more expensive than the traditional steel roll. “With steel prices continually trending upward, using specially-formulated plastics is now the more affordable option. With a price similar to steel yet offering longer wear life and lighter weight – that kind of value isn’t found very often,” he says.

Felton also notes that “one of the most important cost-efficiency issues is that producers choose HDPE rolls that can be retrofitted into any major frame or bracket to replace steel rolls.” He stresses that the market is shifting toward the use of replacement/retrofit rolls over the wasteful and costly practice of discarding the entire idler. Retrofit rolls typically allow a streamlined transition with a hex nut adaptor available for those with hex nut brackets and frames. When attaching rolls to the frame, existing end clips can be used; or producers can choose the use of a bend-over tab that is incorporated into the frame design. The tab simplifies roll installation by eliminating the use of external hardware.

Lastly, Felton stresses that the majority of component wear can be prevented by keeping the abrasive material off the dirty side of the belt. “At many sites, there are no belt cleaning systems, or you will see belt cleaning systems with blades flipped upside down, blades missing, or tensioners not installed. So the perfect world would be combining longer wearing HDPE rolls with a properly installed belt cleaning system,” he emphasizes. “Operators are so used to continually changing rolls that they figure that will remain the case no matter what. But if you take the proper actions, you can minimize so much of this maintenance. The best practice is focusing well-planned maintenance where it will do the most good,” says Felton.

In other words, effective maintenance is working smarter – not harder.