

Zinc Mine Boosts Conveyor Availability with PVC Idlers



A changeover from steel can conveyor idlers to YeloRoll PVC idlers at a Washington underground zinc mine provided benefits ranging from higher system availability to improved worker safety.

Misalignment is a major cause of material spillage, decreasing the life of idlers, while increasing the cost of maintenance and replacement equipment. It also can be a major safety issue.

Steel idlers have long been the norm for conveying systems, but there are other idlers on the market today, including plastic and rubber coated steel idler rolls that are intended to increase safety and productivity. One of these newer products is the YeloRoll titanium-enriched PVC idler. YeloRoll comes in standard 5-in. and 6-in. diameter roll sizes and Innoveyor will also make special order idlers.

Taking its name from its color, YeloRoll is a heavy-duty, lightweight roll that Innoveyor claims exceeds CEMA D and CEMA E standards. Additionally, it is self-cleaning, maintaining a smooth, non-porous, non-stick surface to prevent belt "walking" and costly downtime. The conveyor idlers are corrosion-resistant when used in caustic environments.

At least one U.S. mine has found them to be very cost-effective. "The steel can idlers we were using were failing at an

alarming rate," said Joe Badgley, surface maintenance supervisor at the Pend Oreille zinc mine in Metaline Falls, Washington. Owned by Teck Cominco American, the Pend Oreille mine is an underground room-and-pillar operation with a targeted production rate of 2,000 mt/d (730,000 mt/y). The mill produces zinc concentrate grading 60% Zn with annual production of 80,000 mt.

"I was looking for a conveyor idler that wouldn't build up with wet ore and also last longer than the steel can rolls we had in place. Innoveyor sent us out a sample idler and we decided to give it a shot," Badgley explained. "I installed the first YeloRoll on our conveyor system in November 2004. I was so impressed with their performance that I continue to use YeloRoll today to replace our steel can idlers as they wear out. The total availability of our conveyor system has improved."

He also found that YeloRoll idlers not only reduced the risk of injury from the sharp metal edges of failed steel idlers, but have also reduced damage to con-

veyor belts. Most belt damage is caused from the "pizza cutters" that are produced when a steel can wears through at the end discs and damages the conveyor belt. These cutting edges appear when the welded end-cap seams of steel can rolls corrode and separate from the shell. The YeloRoll bearing house is made of a fiber-reinforced nylon, non-corrosive composite and is press fitted rather than welded.

The idler incorporates a double-sealed, self-lubricating F.A.G. ball bearing system. The inner components are kept clean, dry and corrosion free through the use of a shaft-cap system that protects shaft ends while reducing vibration and heat transfer to the bearing. Triple labyrinth seals keep dirt and other debris away from the roll and inside components. Innoveyor claims that, compared with the tapered bearings used in conventional steel can rolls, YeloRoll runs smoother, cooler and 55% quieter. The carbon-fiber Combi-Cap reduces bearing noise as well as the shock and vibration that are encountered in steel can systems.

"The idlers from Innoveyor have definitely reduced our production costs, especially the cost of production maintenance," said Badgley. Installation is also easier due to YeloRoll's reduced weight; every size idler weighs about 60% less than its steel can counterpart.



YeloRoll conveyor idlers are constructed with titanium-enriched PVC polymer. According to the manufacturer, the PVC shell acts as an insulator and is self-extinguishing in case of fire.

According to Badgley, the initial cost of YeloRoll idlers purchased by the Pend Oreille mine is 10%-15% less than steel can idlers. YeloRoll also has a shell life up to 2.5 times longer that of a steel can idler, making it more cost-effective over the life of the idler—and that's before adding the possibility of production shutdowns, shipping costs and the maintenance cost of replacing steel can idlers. "They are also only about a third of the cost of plastic- and rubber-coated steel idler rolls," Badgley noted.