

Synthetic Rope Improves Safety During Conveyor-Chain Installation

Following is a case study that illustrates how an underground mine benefits from replacing wire rope with Samson's superior synthetic rope solutions.



THE CHALLENGE

When the chain breaks on a continuous miner conveyor, the maintenance crew faces several hours of physically and mentally challenging work to clear the debris from the channel and install a new chain.

Crew members are rerouted to other areas of the mine losing valuable production time while the conveyor is brought back online. Because of the inherent dangers the crew is exposed to when working with wire rope, the 10 to 15 minutes it takes to thread the new chain can be the most intense moments of the process. Wire rope is heavy and has a great deal of torque; if it snaps during use, the bulky cord will recoil in an unpredictable path, striking anything or anyone in its path. The day-to-day use of wire rope can also cause splinters that are dangerous to workers handling the rope, causing severe injury.

“If you get hit in the head with it, it could be devastating,” said the maintenance manager at a large North American mining operation that was searching for a safer installation solution.

IDENTIFYING GOALS AND OBJECTIVES

Having used Samson synthetic rope products in their mines since 2009, a senior maintenance engineer invited Samson Technical Sales Manager Donna Poll to give a presentation on the various applications where synthetic rope is used in mining operations. At that meeting, the engineer inquired about the viability of using synthetic rope in a continuous miner chain installation application. Encouraged by what he had heard, he and the maintenance manager worked closely with Poll and Samson's application engineering staff to develop and field-test a solution that has dramatically enhanced safety at their operations.

ASSESSING NEEDS AND IMPLEMENTING A SOLUTION

For this field test, Samson leveraged the experience of the most advanced R&D team in the cordage industry to develop a cost-effective solution specifically designed for the end user. The mine operations team was impressed by and appreciated Samson's quick turn-around in development and fabrication.

“Samson's willingness to work with us in designing a rope for the job has been a big part of the success we're seeing,” said the maintenance manager. Samson has always recognized that this unique collaborative process between Samson, its distributors, and the end user are critical to providing custom-engineered solutions that meet the needs of the end user.

Samson recommended Saturn-12 for the field trial. All synthetic ropes are significantly lighter weight and more flexible than wire. Saturn-12, a rope made with 100 percent Dyneema® high modulus polyethylene (HMPE), is size-for-size 1/7th the weight of wire rope. Saturn-12 is Samson's next generation in 12-strand working lines and utilizes one of Samson's proprietary

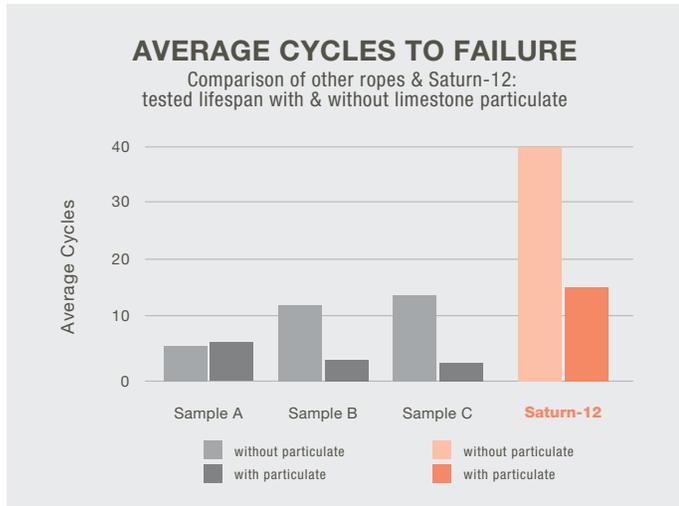


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THE STRONGEST NAME IN ROPE

Samthane coatings that dramatically improves abrasion resistance and increases residual strength as much as 20 percent when compared with other lines made with HMPE and their conventional coatings. Its easy-to-handle construction is easy to inspect and splice in the field. In addition, injury caused by metal burrs and splinters are eliminated.



Saturn-12 improves safety and efficiency during conveyor-chain installation.



Saturn-12 lasted more than 5 times longer than the average of the other 3 ropes tested.

The advantages of synthetic rope don't end with easier handling. Saturn-12 is torque free, so in the unfortunate event that a break occurs during use, there is a drastic reduction in the risk of injury caused by recoil. Saturn-12 will recoil in a more predictable path with a much tighter spread from the original line of operation.

EXAMINING RESULTS AND BENEFITS

Initial use of Saturn-12 on a planned install at the mine went smoothly and was well received by the work crew.

“The synthetic rope is lighter weight and easier to handle,” noted the maintenance manager. “Instead of taking two guys to drag the steel rope up to the miner, one guy can throw this rope under his arm and take off with it, no problem. During the install process, it's easier to lay out and it aligned better on the foot shaft than steel rope, which is a big advantage.”

The overall design of the rope assembly has to match the wire rope that is currently in use, so observing rope behavior on the machine is a critical part of the trial. Some fine-tuning and improvements to the test rope took place after

the initial trial. Through engineer review, rope diameter was modified to better handle the power of the scoop by increasing the rope diameter from 9/16 inch to 1 inch. Additionally, adjustments were made to accommodate requirements at the rope termination. The adjustments provided an efficient and cost-effective alternative to the original design.

THE SAMSON ADVANTAGE – YOU WON'T GET THIS ANYWHERE ELSE

Field testing continues, and mine management is working with Samson to implement a training program to educate rope handlers on the use and care of synthetic rope. Due to the performance and safety benefits of Samson's Saturn-12, the mining company plans to convert its conveyor chain assemblies at its multiple North American operations.

Simply selling a rope does not guarantee success. Samson partners with its master fabricating distributors and mine operators from long before the purchase to long after installation to provide high-performance solutions designed to improve efficiency, reduce operation costs, and provide long-term value from installation to retirement. We call it **The Samson Advantage**; our customers call it peace of mind.