

Conveyor Consistency

EV car battery manufacturer finds success with Fenner's Eagle Poly-V belts

Matthew Jaster, Senior Editor

Eagle Poly-V belts helped one of the leading EV battery manufacturers move away from roller chain conveyors, thereby reducing noise and eliminating the downtime, labor, and maintenance expenses associated with chain drives.

A roller chain can handle a lot of weight, but it has some significant downsides. It's noisy and needs regular maintenance. It's expensive, and when it breaks, workers can be injured.

Even its performance is a problem.

"To make it an endless loop, the fit must be loose, which causes a lag between the time the motor starts and when the rollers start to move. Over time, the chain stretches, making positioning less accurate and the conveyor less efficient. To fix it, you either adjust the take-up sprockets or remove a link," said Derek Forney, senior product manager, belting at Fenner Precision Polymers.

Recognizing noise, cost, maintenance, and poor performance concerns, one of the leading EV car battery manufacturers was looking for an alternative for an RS 50 roller chain to drive a one-metric-ton pallet conveyor.

The roller conveyor had 76 mm rollers with 56 mm end caps interlocking by 8EPJ536.

A local sales representative suggested redesigning the roller conveyor system to use Fenner Drives' Eagle Poly-V belts. Made from polyurethane, Eagle Poly-V belts are available for all kinds of power transmission applications with designs and reinforcement benefits. By eliminating the roller chain, the battery manufacturer reduced noise and eliminated the downtime, labor, and maintenance costs the chain drive required. Forney said Eagle Poly-V products provide a flexible range of solutions depending on the application requirements.

"Reinforcement options or density, rib count, rib profile, material hardness or temperature range, etc. all play a part in the belt design. While this case is focused on material handling with EV batteries, there's a broader need for customer solutions to solve end user issues including downtime, product performance, and total cost of ownership," he added.

Forney said one of the many advantages of Fenner's belt products is the customization capabilities. "We try to provide custom engineered solutions that are precisely tailored to meet the needs of our customer's applications."

This follows Fenner Drive's philosophy of paying attention to the constant flow of feedback and unique application challenges customers face. They're looking for performance improvements, custom configurations, and material upgrades. Forney reiterated the importance of asking the right questions.

"What equipment are they using and what limitations do they have? For example, what motor capability is there? I attended MODEX this year and we discussed with customers how they look at the application from a total package



An instrument measures the performance of conveyor rollers driven by Eagle Poly-V belts, which maintain consistent tension and immediately transmit the motor's action to the rollers, unlike traditional roller chains.

perspective. We're trying to solve problems, but we're not total system designers. You must understand that full application context. What are some of the things we've seen in the past that might impact their abilities? Do you have restraints on installation that need to be addressed? We have standard belt sizes, but what if the customer has flexibility on center distances? As we look at our belting portfolio, we'll determine how to optimize the materials and the technologies our customers need to achieve the best value," Forney said.

As Fenner works directly with several OEMs, the trick is making sure the engineers are looking at everything involved in the design phase and that they've checked all the appropriate boxes before suggesting or customizing the belt for the application.



In a comprehensive comparison by a leading global logistics company, the Eagle Poly-V belt surpassed Rubber Poly-V belts in performance, showcasing superior durability, less frequent replacements, reduced wear and tear, minimal debris, and lower maintenance needs.

For the EV car battery manufacturer, Forney said an advantage was working with a local sales integrator that provided immediate feedback and helped make sure the Eagle Poly-V product was the correct solution over a roller chain drive.

The Eagle Poly-V belt had a significant reduction in decibels, compared to the roller chain. Unlike the roller chain, the Eagle Poly-V belt maintains consistent tension, transmitting the motor's action immediately to the roller. This provides much more efficient power transmission.

Switching to Poly-V saved the EV plant 10–15 percent in initial build and annual maintenance costs for roller sprockets and pulleys required for chain drives. There was also an overall reduction in total maintenance costs due to less loss of tension and no greasing.

Additionally, the Eagle Poly-V eliminated safety concerns associated with roller chains, especially injuries associated with accidents. A major benefit for EV plants was the elimination of debris within the facility. Chains become corroded when exposed to moisture, dust, and chemicals in the typical industrial environment. Even traditional rubber Poly-V belts generate dust. Unlike rubber Poly-V belts, Eagle Poly-V belts are a clean, dust-free solution that is optimal for these applications.

Rubber Poly-V Belts vs. Eagle Poly-V Belts (A Comparison)

A global leader in logistics and supply chain performed extensive in-house testing to compare Eagle Poly-V belts to rubber Poly-V belts on their roller conveyors. What they found was not only success in the four-month testing period, but the belt continues to run strong over a year later.

Rubber Poly-V Belts:

1. There were 317 rubber Poly-V belts replaced during the four-month testing period.
2. Belt degradation and poor performance caused excessive downtime with both straight and angled rollers.
3. Rubber belts were worn and became lodged around the roller and grooves causing damage and failure to the roller.
4. Debris built up in the roller grooves resulted in the Poly-V tracking off the pulley.
5. Rubber belts require installation with a high belt tension causing damage to some of the belts.

Eagle Poly-V Belts:

1. There were 0 Eagle Poly-V belts replaced during the four-month testing period.
2. Fenner Drives Eagle Poly-V belts have been in the same application with no degradation.
3. Eagle Poly-V has no signs of damage or wear and did not become lodged around the roller and grooves.
4. No belt flaking or debris build up, Eagle Poly-V stayed on track in the groove.
5. Generous tension tolerance resulted in no belt damage during installation.

The EV market is an area Fenner will be targeting now and in the future.

"We have three divisions: Industrial Motion, High-Tech Coated Fabrics, and Air and Fluid Handling, Textiles and Belting and Power Transmission. The question is how can we pivot and focus on the EV market from all three different areas? There's a lot happening in EV and there's a lot of synergy based on what we've been doing internally for years, especially on the belt side. In the short term, we're looking at EV applications in Asia, but as those plants are being set up here in North America, we'll begin to look at several potential opportunities we can leverage in the EV market here," Forney said.

As for the future of belt technology, if MODEX 2024 was an indicator of things to come, the PT market is coming back. The key focus will likely be on sustainable materials, energy reduction, and overall increased performance.

Material handling, packaging, and logistics will continue to be bright spots in belting for years to come.

"There are so many pick and place, automated options in these markets," Forney said. "Timing belts and conveyor belts are rebounding and things are looking very promising from that perspective. Nothing moves without a belt or a drive."

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