

3PL's New Rack Supported Work Platforms Optimized for Autonomous Mobile Robots

Cornerstone Specialty Wood Products, LLC®

When called upon to design and install two separate rack supported work platforms for a third-party logistics (3PL) company's two warehouses, Ridg-U-Rak — one of the world's largest pallet rack and storage rack manufacturers — turned to their go-to solution provider for the elevated flooring: Cornerstone Specialty Wood Products, LLC. The company's ResinDek® flooring panels are engineered specifically for mezzanines, industrial work platforms and pick modules.

"We've partnered with Cornerstone to use their ResinDek flooring in our designs for more than a decade," notes Jim Staszewski, a Ridg-U-Rak Senior Designer. "They're on the leading edge of developing high-density, elevated flooring products that handle high traffic and highly concentrated dynamic loads, like those on pallet jacks and robotic wheels. When you buy their products you know you're getting high-quality flooring. They are the clear leader with an unparalleled combination of design, engineering, and product testing."

As Staszewski and the engineering team at Ridg-U-Rak were developing the designs for the two facilities, it came to their attention that the 3PL planned to deploy a fleet of autonomous mobile robots (AMRs) from Locus Robotics on both the floor and elevated platform levels of the two new structures.

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"Cornerstone Specialty Wood Products has been key in helping us with research and development," states Jeffrey Cody, Director at Locus Robotics.



Ridg-U-Rak's highly efficient design uses ResinDek® with TriGard® flooring for a 3PL's rack supported platforms in two different warehouses.

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ResinDek® with TriGard® Floor Panels are Engineered to Maintain the Performance of Autonomous Mobile Robots (AMRs)

Collaborative AMRs like those from Locus Robotics are engineered to be nimble and handle payloads quickly. They safely navigate around both people and obstacles while accomplishing a variety of transportation tasks. AMRs are increasingly being deployed within warehouses, distribution centers, and order fulfillment operations to help workers be more productive.

Jeffrey Cody, Director at Locus Robotics, explains “Each robot is equipped with scanners and totes or shipping cartons. The Locus system optimizes the orders on the bot and the bot autonomously navigates the most efficient path from location to location where associates are there to quickly pick items to complete the orders. This is far safer and more efficient than associates pushing carts around with the picked items or walking long distances between picks. Our robots handle the travel and transportation allowing workers to spend more time working and less time walking.”

While AMRs can be deployed in existing warehouse and distribution centers, some considerations should be considered to ensure they navigate and perform at their peak. Specifically, the durability and condition of the flooring upon which they travel. Worn or uneven surfaces can disrupt the functioning of the vehicle's laser-based navigation sensors, slowing down its rate of travel.

“Speaking in generalities, most AMRs in the field run on minimal, if any, suspension. So, every time they travel over an area in the floor with excessive wear, a bump, or a gap, the potential exists for the navigation system to be disrupted — even for just a couple of seconds,” explains Cody. “If each robot's ability to navigate is hampered repeatedly by the flooring, then those seconds can add up to a considerable amount of wasted time, negatively impacting the overall productivity of the operation.”



While AMRs are autonomous, their optimal paths may follow repetitive patterns in areas. As a result, the millions of cycles of wheel load traffic from the robots can wear out a standard flooring surface. Since they're outfitted with sophisticated sensors and computerized components, a discharge of static electricity built up from the flooring might damage the vehicle's electronics, possibly even rendering it unusable. ResinDek with TriGard is engineered specifically to endure the consistent, repeated travel patterns associated with AMRs. The TriGard finish comes standard with electrostatic dissipative (ESD) finish that protects sensitive electronic equipment from damage. ResinDek with TriGard panels are also backed by a 10-year product warranty.

“From my perspective, the whole design was built out dimensionally to optimize the movement of our robots. Although we didn't make any specific recommendations about the flooring, when we learned it would be ResinDek from Cornerstone Specialty Wood Products, we knew our AMRs wouldn't have any problems. As a robotics company, we test a variety of performance parameters — including anti-static, coefficient of friction, stopping with and without full loads, and so on — on different flooring surfaces,” states Jeffrey Cody, Director at Locus Robotics. Cornerstone has worked with Locus Robotics for a number of years, providing a variety of ResinDek flooring products to the company (and to other robotics manufacturers) for their testing labs.

Ridg-U-Rak's sales and engineering staff values how quickly Cornerstone turns around quotations and design layouts on the drawings. “They're wonderful to work with; we send them our AutoCAD drawing of the work platform, they figure out the precise layout of the floor panels, and they return the drawings showing the flooring design, as well as a cut sheet and instructions for installation. The installers know exactly where every panel goes, where the cuts are, the orientation of each tongue and groove, Cornerstone makes the installation faster and less expensive. The more efficiently we can install the floor system, the sooner we complete the project, which leads to a higher level of customer satisfaction. It saves us a lot of time, and we know it's going to be perfect every time,” states Jim Staszewski, a Ridg-U-Rak Senior Designer.