



Eliminating downtime and timeouts in an automation company's fully autonomous warehouse

Case Study



Customer

As a builder and operator of automated warehouse systems, this company works with retail, wholesale, and food and beverage brands to help them grow and scale their businesses. Its unique system stitches different automation components together through a unified platform so users can coordinate fleets of autonomous equipment to manage their inventory.

Transforming supply chain capabilities with end-to-end robotic automation technology powered by artificial intelligence (AI), the company helps brands quickly process inbound and outbound shipments. Clients can choose to bring the company's AI tech inhouse and run the systems themselves, or they can invest in warehouse-as-a-service offerings, which enable the company to manage material handling for clients.

Thanks to its AI-powered technology, the automation company boasts the world's fastest intake and retrieval times—but it's always looking for ways to improve.

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Belden designed, tested and implemented a robust, reliable wireless network solution that's purpose-built to support high availability and performance predictability for mobile automation.



Common connectivity challenges

- > Intermittent robot disconnections caused by the wireless network
- > Network availability timeouts, leading to delays, system reboots and robot collisions
- > Manual retrieval of disabled robots

Challenge

As the company continued its innovative, holistic approach to automating warehouse logistics, it also watched its sales and growth compound quickly to prevent downtime and inefficiency as it expanded, the company knew it needed to make improvements to its network infrastructure.

To begin, the automation technology company wanted to replace its wireless network solution to support its autonomous mobile robots (AMRs), which was edging toward obsolescence— but it wasn't sure what to replace them with, or what else needed to be done to improve availability and performance predictability.

Every automation system the company deploys comes with specific uptime requirements from the customer. If the company can't meet or exceed that customer requirement, then financial penalties ensue. As an innovator attempting to move packages in and out as quickly and safely as possible, wireless connectivity is a must to support automated guided vehicles (AGVs) and AMRs—but it also introduces downtime risk.

The company wanted to find a partner that could tailor a network solution to reduce this risk, as well as support onsite deployment of that solution.

Collaboration & Discovery

Belden knows material handling inside and out— including the challenges that plague nearly every warehouse and distribution facility.

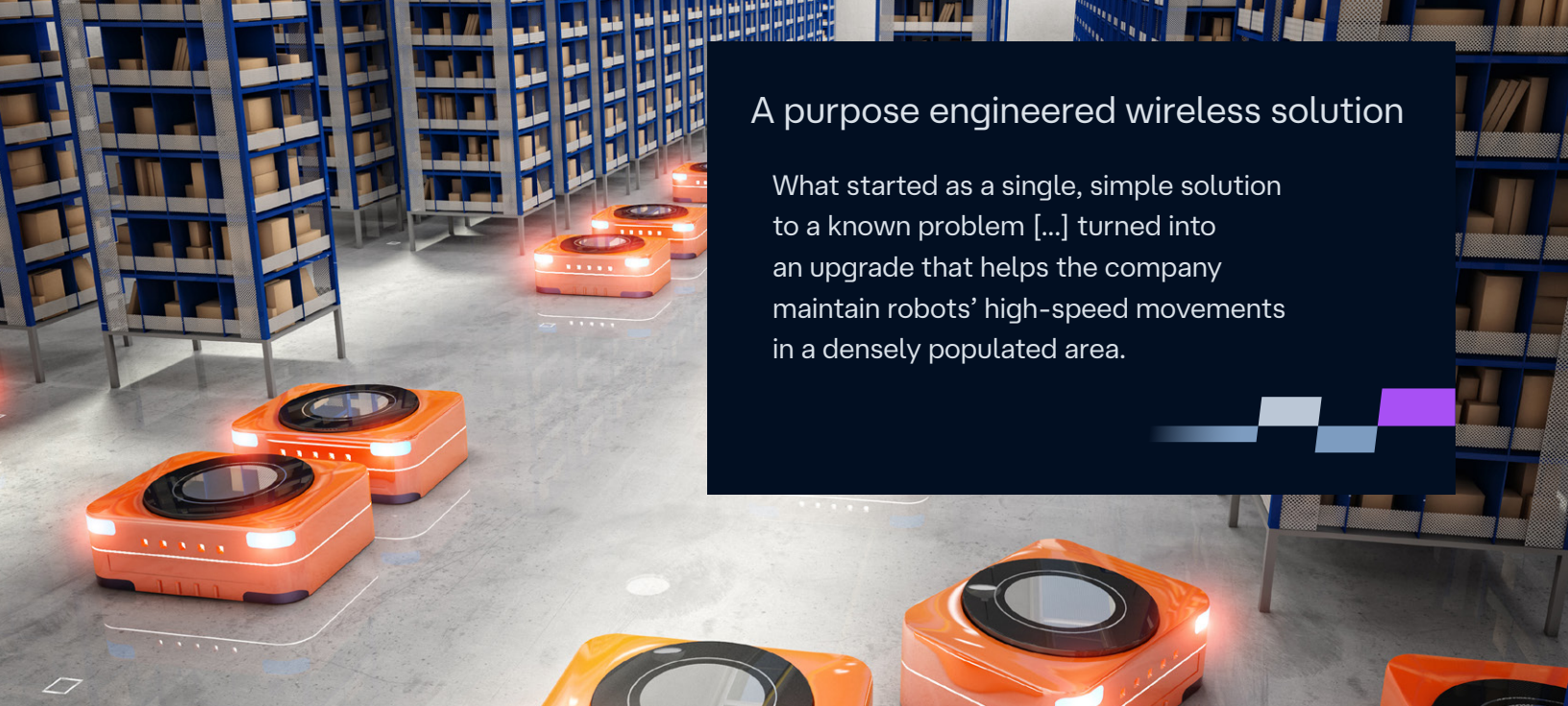
When Belden's material handling experts learned about the company's quest to improve availability and predictability, they knew the problem likely extended beyond unreliable wireless connectivity.

Because the company uses AGVs and AMRs, it likely struggled with the same connectivity challenges that many similar environments deal with, including:

- Intermittent robot disconnections caused by the wireless network
- Network availability timeouts, leading to delays, system reboots and robot collisions
- Manual retrieval of disabled robots

When Belden asked these questions about performance, the company's answer was immediate: Yes, they were dealing with these connectivity obstacles, too. When safety packets are missed amid wireless communication, AGVs and AMRs are designed to fail to a safe state, which creates downtime. And because robots couldn't stay connected, the company wasn't able to meet its package-per-hour processing rates.





A purpose engineered wireless solution

What started as a single, simple solution to a known problem [...] turned into an upgrade that helps the company maintain robots' high-speed movements in a densely populated area.

After conducting an in-depth wireless network data flow analysis, Belden was also able to identify inefficiencies in the company's data processing.

After completing an assessment and analysis, Belden's experts and engineers presented a new approach to balancing safety and performance, describing how the company could keep its AGVs and AMRs moving and communicating— without dealing with downtime issues or compromising safety.

Because it seemed too good to be true, the company wanted to see Belden's proposed solution in action. Belden deployed a wireless network solution at the company's site so its staff members could see firsthand how it worked.

In this case, seeing was believing. The company was amazed at the improvements, and it was ready to roll out the proposed changes. To make sure everyone was on board first, Belden met with all stakeholders and decision-makers, including the company's mechanical, electrical and deployment teams.

Solution

What started as a single, simple solution to a known problem—replacing the underperforming wireless solution with a purpose engineered wireless solution—turned into an upgrade that helps the company maintain robots' high-speed movements in a densely populated area.

Belden designed, tested and helped implement a robust, reliable wireless network solution that is purpose-built to support high availability and performance predictability for the company's mobile automation. Belden's engineers tailored the solution to include the features the company needed to make deployment faster and easier.

Because the solution is vendor-agnostic, it seamlessly integrates with existing warehouse systems and processes, minimizing the potential for disruption.

To work around supply chain issues that were prevalent during this project, Belden relied on its manufacturing plant in North Carolina to expedite delivery and get necessary products to the company quickly. Through reliable channel partners, necessary products are continually kept in stock for future use.

With a roadmap Belden created to map out a guide to technology and education requirements for on-time launches of more than 100 new distribution sites, the warehouse automation company is now better prepared for the growth headed its way.

As a result of the success of this solution, Belden now helps the company with all things networking, from simplifying network procurement to optimizing net-work algorithms. As a result of the success of this solution, Belden now helps the company with all things networking, from simplifying network procurement to optimizing network algorithms.



With a new wireless network solution in place, the company is confident that it can meet—and even exceed— customer commitments for the first time.



Impacts & Results

With a new wireless network solution in place, the company is confident that it can meet—and even exceed—customer commitments for the first time.

According to projections based on current revenue and ROI from the network enhancements, the company can expect to see results like these along their digital journey:

»»» A **99% reduction** in wireless disconnections and timeouts

»»» A **11% increase** in package processing rates per hour

»»» A **\$3 million increase** in package processing in annual services revenue

The company is no longer focused on downtime and disconnections, but on what it does best: delivering advanced automation solutions that make the supply chain faster, more efficient and more profitable for manufacturers, distributors and retailers.



Connect to what's possible.

Case Study



About Belden

Belden Inc. delivers complete connection solutions that unlock untold possibilities for our customers, their customers and the world. We advance ideas and technologies that enable a safer, smarter and more prosperous future. Throughout our 120+ year history we have evolved as a company, but our purpose remains – making connections. By connecting people, information and ideas, we make it possible. We are headquartered in St. Louis and have manufacturing capabilities in North America, Europe, Asia and Africa.

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