Belden

Rooted in America. Built to Endure.

Belden modernized its 95-year-old Richmond facility with predictive maintenance and U.S. innovation fueling future-ready manufacturing.

Case Study



Customer

For nearly a century, Belden's Richmond facility has been a cornerstone of American manufacturing. Rooted in America means honoring that legacy while evolving to stay competitive. As part of Belden's commitment to U.S. reindustrialization and reshoring, this facility proves that legacy plants can not only endure but lead the future of domestic industry.

Richmond faced mounting operational pressure in a shifting industrial landscape:

- Frequent unplanned downtime and hard-to-find replacement parts
- A retiring skilled workforce and shortage of new talent
- Disconnected machines across generations of equipment
- Outdated systems limiting visibility and slowing output

Rather than pursue costly rip-and-replace upgrades, the team at Richmond partnered with Belden's Customer Innovation Center (CIC) to modernize operations from within. The result was a scalable foundation for predictive maintenance and real-time visibility.

"We transformed this black box into a glass box," said Sylvia Feng, Global Director, Digital Automation Consulting. "Now, their operators and supervisors can see what's going on and troubleshoot based on near-real-time data."

The facility also serves as a blueprint for national reindustrialization efforts. Across the U.S., facilities like Richmond are dealing with aging infrastructure, labor gaps and digital silos. Belden's in-house transformation provides proof that modernization is achievable, scalable and impactful.

"Rooted in America reflects our deep history and ongoing commitment to delivering reliable, high-quality solutions within the U.S.," said Andries Boone, Managing Director, Solutions Delivery, Americas. "We remain focused on supporting our customers through a strong domestic footprint and forward-looking innovation."

Challenge

Despite its long-standing success, Richmond was at a crossroads. The facility needed to evolve or risk falling behind.

Challenges included:

- Aging equipment with limited visibility
- Fragmented operations across disconnected legacy systems
- Labor shortages and an aging workforce
- Increasing maintenance costs and rising downtime

The team needed a solution that could work with existing infrastructure, deliver insights quickly and scale sustainably without requiring major overhauls.

Importantly, this wasn't just a technology implementation, it was a shift in how the plant operates.



Solution

Belden's CIC consultants partnered with Richmond's leadership to modernize operations from the ground up, making sure to prioritize performance, scalability and ROI.

Three core steps defined the transformation:

1) Connect all machines, regardless of age, into a secure, vendor-neutral OT network
2) Deploy sensors to monitor vibration, temperature and current in real time
3) Analyze trends to predict failures, improve response and reduce unplanned downtime

The team walked the plant floor to align technology with real-world conditions and business goals. Rather than a top-down mandate, the approach was hands-on and collaborative. The plan was tailored for how Richmond actually runs.

Operators now use tablets and dashboards to monitor system health and performance in real time. Data-driven decision-making enables teams to prioritize maintenance and minimize costly interruptions.

Importantly, this wasn't just a technology implementation, it was a shift in how the plant operates. Richmond is paving the way for broader digital transformation across Belden's U.S. operations.

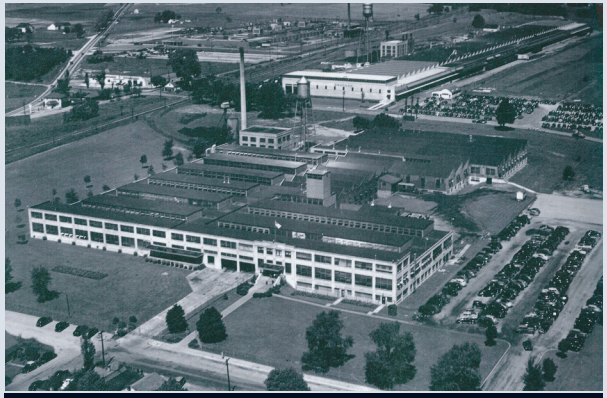


Results

The impact of Richmond's transformation was immediate and continues to grow:

- **OEE improved from 56.5% to 62%,** with additional gains expected
- **300GB of data collected** from over 150 sensors in just 8 months
- **$500K+** in estimated annual savings
- **$1M in potential revenue unlocked** if capacity continues to scale
- Payback period: just 1.25 years

Operators have access to real-time dashboards, enabling quicker troubleshooting and more strategic responses. "Belden didn't say, 'You need to upgrade everything,'" said the plant's maintenance manager. "They found a better way to get the data."



Richmond community snapshot

Belden's Richmond plant is more than a manufacturing site; it's part of the city's fabric.

- 290+ employees across the site
- One of the region's largest employers
- Multi-generational workforce on the floor

Fast facts: Richmond Wire Mill

- 1 ft of 5/16" copper rod drawn to 44 gauge = 4.62 miles
- A single coil holds 120,000+ miles of wire, enough to circle the Earth nearly 5 times
- 20 tons of plastic compound processed daily
- 65,000 lbs. of copper used per shift

Richmond's success also provides a national model for legacy modernization. Facilities across the country face similar challenges, including:

- Disconnected automation and outdated equipment
- Aging workforce and recruitment obstacles
- Data silos blocking process improvements
- Escalating downtime and inefficiency

Belden is turning these pain points into opportunity, applying innovations from Richmond to brownfield facilities throughout the U.S.

Through its CIC network and deep domestic experience, Belden is helping American manufacturers:

- Build predictive maintenance programs
- Bridge IT/OT gaps with secure, scalable networks
- Deploy quickly with vendor-agnostic architecture
- Future-proof operations and increase competitiveness

The Richmond facility stands not only as a model of smart manufacturing, but as a reminder that innovation and community can thrive together. With more than 290 employees across the plant, division and distribution center, including multiple generations from the same families, this facility remains deeply rooted in its local workforce and its purpose.

As American manufacturers confront aging infrastructure and growing pressure to modernize, Richmond proves that legacy plants can lead the next industrial chapter. With practical steps, the right expertise and scalable tools, transformation is possible—right here, at home.

Ready to modernize your facility while honoring what built it?

See how Belden can help you lead the next chapter of American manufacturing.
Explore stories, strategies and solutions at:
www.belden.com/rooted-in-america

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