

Achieving CPG 4.0 with a connected plant

Solution Brief



Build the bridge to the next era of smart factories with Belden's complete connection solutions.

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Belden builds a safe bridge to CPG 4.0



Establish a network backbone

Break down all data silos within the factory, connect all systems and build an end-to-end connection. This will provide a safe pathway to transition into a smart factory.



Visualize the factory

Collect and contextualize data from all systems, including aging or proprietary assets. Use the power of big data and machine learning to visualize assets, workflows and schedules.



Automate from insights

With the factory visualized, improve overall equipment effectiveness (OEE) and productivity. Gain actionable insights from data to optimize your operations.

Obstacles to CPG digitization

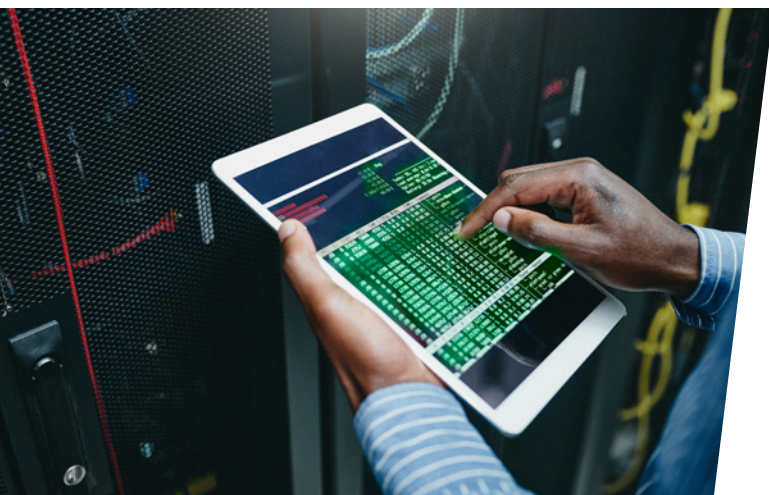


Silos, proprietary systems and legacy assets Inhibit the Industry 4.0 journey

Digitization is crucial for the next era of manufacturing in the Consumer Packaged Goods (CPG) industry. However, there are roadblocks in the CPG space. IT and OT systems are siloed. Legacy assets lack visibility and connection to centralized monitoring. Proprietary technology creates ad hoc and disparate networks. Manufacturers can only digitize and benefit from efficiencies, automation and increased uptime by breaking down these silos and better connecting their factories.

Becoming a best-in-class plant appears daunting and unachievable

The benefits of a connected plant are remarkable. The Industrial Internet of Things (IIoT) enables exponential efficiencies, real-time system visibility, predictive failure detection, waste reduction and more. However, the capital costs and risk of downtime in overhauling legacy systems and connecting proprietary and decentralized systems present a logistical nightmare. This is especially true in the CPG sector, which relies on highly specialized systems.



Digitization is filled with uncertainty and risk

While Industry 4.0 is a long-term goal for many CPG manufacturers, uncertainty around the required technologies and potential costs slows the pace of achieving that goal. Digitization requires adding many unknowns to a highly volatile environment. These include IIoT devices and sensors, expanded networks, data lakes, and on-prem to cloud connections. These developments introduce risks to operations. Potential downtime as systems are built and connected and increased exposure to cyberthreats are significant concerns.



Belden addresses CPG challenges

We are committed to sustainability and future-readiness, aiming to help you create a smarter and more prosperous future.

- Recovers lost productive equipment time due to micro-stops and scrap or waste.
- Recovers material loss due to incorrect machine settings and equipment setup.
- Recovers more than 50% waste through machine setting monitoring.

Addressing these challenges is crucial for enhancing efficiency, reducing waste and ensuring long-term success in the CPG industry.

The road to a connected plant: maximize efficiency and value

Belden's experts identified four crucial design steps to successfully connect workers with machines:

STEP 1 : digitize assets

Upgrade your plant assets and workflows to pre-ingest more structured data for use by analytics systems.



STEP 2 : onsite field and backbone network

Establish onsite field and backbone networks to fulfill OT network priorities of data availability, data integrity, and data confidentiality.



STEP 3 : remote connection

Enable secure remote access to machine data, with multiprotocol support and field-level insight into operational activity.

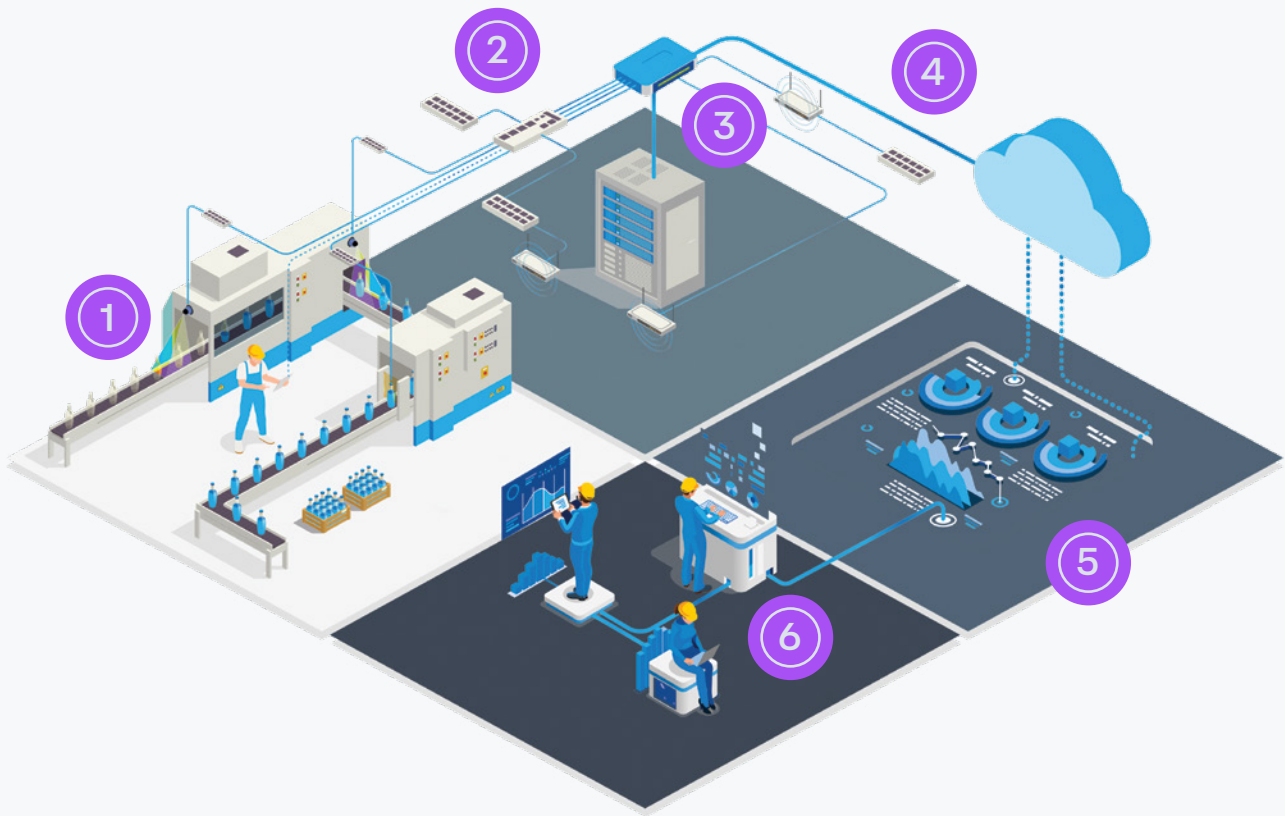


STEP 4 : dataflow visualization

Visualize and showcase data for network and security management as well as OT performance.



Key components for your connected CPG plant



① Sensors on each machine that measure pressure, temperature, flow, object count, etc.

② Stable end-to-end network backbone, including IOs, cables, switches, protocol converters, edge gateways, and access points for machine data collection.

③ Network security for OT and IT networks.

④ Data ingestion via OPC servers and data storage for both on-prem and cloud used for analysis.

⑤ Reporting and visualization of OEE waterfall by machine and line and for root cause drilldowns.

⑥ Analytics workflows for calculating OEE, root cause analysis and queries, and monitoring machine parameters.

Unlock millions in recurring benefits with best-in-class network

\$2.5 M

Connected workers and machines

Problem:

- Micro-stops caused by incorrect settings
- Scrap/waste due to parameter issues

Solution:

- Collect sensor data from all machines
- Run advanced analytics to optimize parameters and settings
- Make data available to operators and managers on-demand

\$2.0 M

Production schedule optimization

Problem:

- Excess changeover and cleaning time due to suboptimal sequencing of SKUs
- Waste due to overproduction

Solution:

- Collect sensor data on raw material usage and output
- Collect demand data from IT systems
- Dynamically optimize production schedule across lines and the entire network

\$0.5 M

Predictive maintenance

Problem:

- Downtime due to equipment failure

Solution:

- Collect sensor inputs
- Run advanced analytics to predict equipment failure
- Provide plant managers and operators with dashboard showing equipment health

Total impact: up to \$5M annual savings

Source: Expert interviews

How Belden can help

Crafting the perfect solution for your business needs can be challenging. That's why Belden offers direct access to our experts, ensuring you get the support and guidance you need.

>>> Solution Architect

- Deep knowledge of network architectures
- Design solutions and networks of the future

>>> Digital Automation Consultant

- Lead workflow and data assessment
- Identify opportunities for digital transformation
- Calculate projected ROI

>>> Solution Consultant

- Deep technical knowledge of applications and verticals
- Conduct industrial network audits

>>> Service Engineer

- Deep knowledge of products and technologies
- Test and commission networks
- Deliver pre- and post-sale technical support



Connect to what's possible.

Solution Brief



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.

For more information, visit us at:
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