Belden

Belden Horizon Factory Insights

Energy Use Optimization

Solution Brief

Energy Monitoring and Optimization

Belden Horizon Factory Insights, in partnership with Edge2Web and powered by AWS IoT SiteWise, transforms how today's manufacturers manage energy in their factories. This joint solution goes beyond traditional monitoring—delivering real-time visibility into energy consumption, production efficiency, and sustainability KPIs through intuitive dashboards and GenAI-driven insights. Built on a cloud-native, no-code platform, it seamlessly connects edge data acquisition with contextualized analytics, empowering manufacturers to reduce costs, optimize operations, and accelerate their journey toward intelligent, energy-efficient factories.

Table of Contents

Current state and typical challenges	2
Edge2Web + Belden CloudRail solution	3
Turning data into insights	4

Current State of Energy Monitoring in Smart Factories

Manufacturers aiming to optimize energy usage and reduce costs face significant challenges when deploying smart factory energy monitoring systems:

Technology and Integration Challenges

- Fragmented plant systems hinder capturing consistent energy data
- Manual asset modeling slows accurate energy profiling
- Limited edge integration blocks real-time visibility
- Multi-vendor solutions cause inconsistent KPI tracking
- Siloed data locks customers into proprietary data stores

Operational and Implementation Challenges

- Complex setup delays energy dashboard deployment
- High costs and long implementation timelines

Expertise and Resource Limitations

- Shortage of experts for energy interpretation
- Limited cloud and AI knowledge for insights

Impact of These Challenges

These issues often lead to:

- Delayed energy optimization and sustainability progress
- Higher operational costs from inefficient energy use
- Missed opportunities for performance and cost savings
- Opportunities for performance optimization

Factory data insights

of discrete manufacturers lack analytical capabilities to derive actionable insights from energy data.

of energy efficiency opportunities in discrete manufacturing remain underexploited due to ad-hoc energy consumption approaches.

of discrete manufacturers say fragmented energy data coming from varied devices hinders their ability in unlcoking value from energy use information.

of discrete manufacturers rely on experience-based, rather than data-driven, operations for major energy-consuming equipment.

Source: Accenture Research

Addressing key priorities

In many manufacturing organizations, optimizing energy use is a shared priority across multiple functional areas. Key leadership stakeholders may include the following:

CEO

How can I gain real-time visibility into energy performance across all operations to cut emissions and reduce cost per unit produced?

CIO/CSO

How do I ensure the best possible technology is used for energy management while also ensuring data security?

EH&S VP

How can I leverage real-time energy data to automate compliance reporting and uncover cost-saving opportunities?

Manufacturing VP

How can I gain deep insights into production processes while cutting energy costs and improving efficiency?

The Edge2Web + Belden CloudRail solution combines:

- **Belden CloudRail:** A plug-and-play system linking 30,000+ industrial sensors with automated data contextualization, normalization, and secure transfer to AWS IoT SiteWise
- **Edge2Web Power Tools**: AI-driven analytics and visualizations that provide instant insights into energy consumption and cost by asset, line, site, and other useful metrics.

The Belden + Edge2Web Smart Factory Energy Solution empowers manufacturers to turn energy data into actionable insights. With rapid deployment, no-code customization, and seamless AWS integration, it enables real-time monitoring of energy consumption, predictive analytics, and GenAI-driven recommendations. This approach helps manufacturers meet aggressive sustainability targets, lower energy costs, and optimize operations—making energy-focused digital transformation tangible.

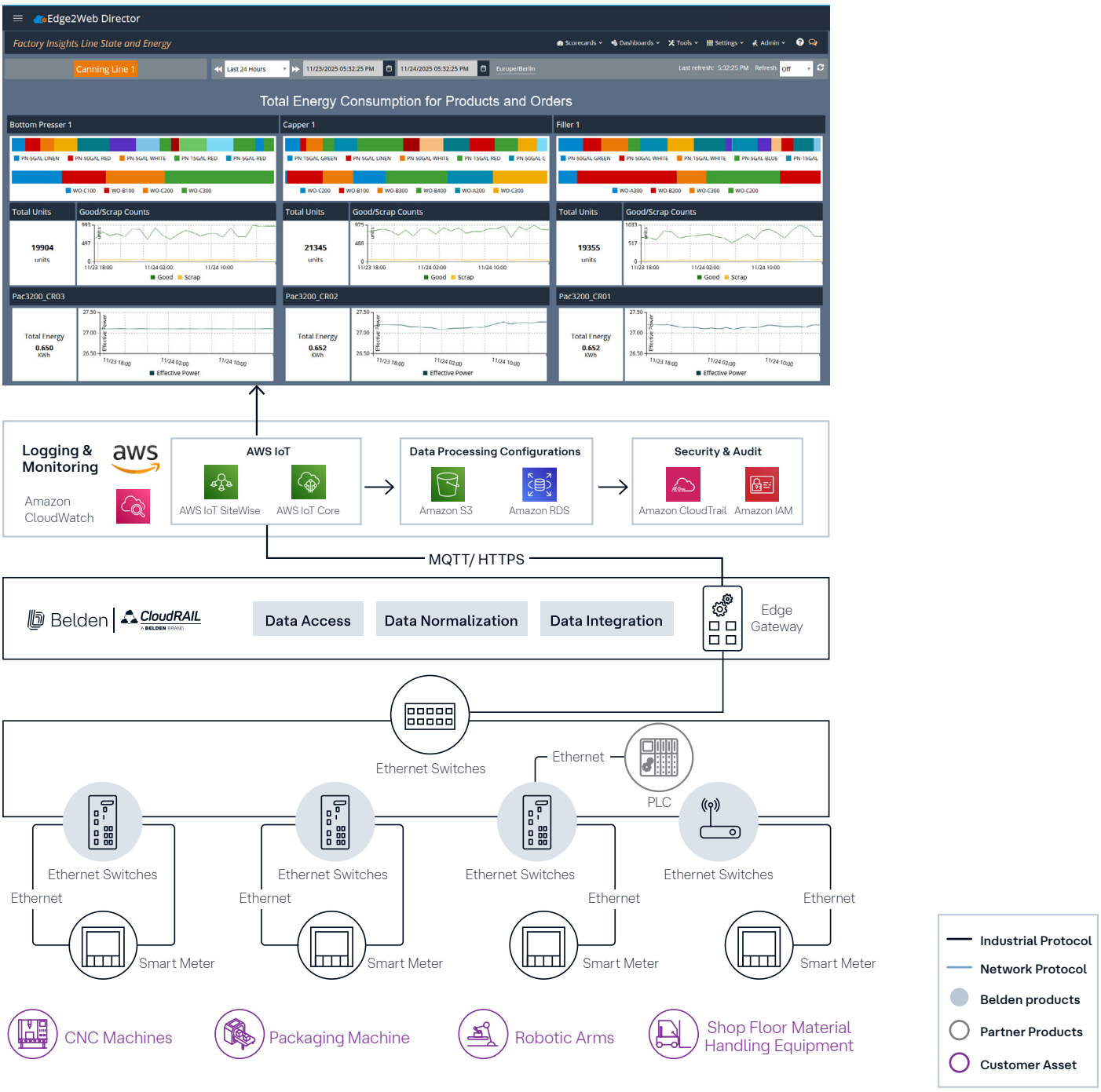
Value Drivers	No-Code Tools: Create custom KPIs, dashboards, and scorecards without programming	Edge-to-AWS integration: Direct data flow into AWS IoT Sitewise ensures data accessibility, governance, and ownership	GenAI Assistance: AI-powered summaries, alerts, and digital playbooks for faster decision-making	Multi-Protocol Support: Connects to over 30,000+ industrial sensors	Scalability: From single-site deployments to global, multi-site operations
Positive Outcomes	Rapid Deployment: Configure and launch in days, not months	Reduced Costs: Minimize custom development and integration expenses	Improved Visibility: Real-time insights into asset energy monitoring and process efficiency	Enhanced Productivity: Empower operators with intuitive tools and alerts	Future-Ready: Integrates with AWS services for ML, analytics & GenAI

Turning Data into Insights

Together, these components form a scalable, end-to-end smart energy monitoring solution that is fast to deploy, easy to configure, and extensible with no-code and low-code tools.

How It Works

1. Data Acquisition: Belden CloudRail collects and normalizes data from shop floor devices.
2. Cloud Ingestion: Data is securely transmitted to AWS IoT SiteWise.
3. KPI Computation: Edge2Web Power Tools (EPT) compute standard and custom energy monitoring KPIs. Visualization: EPT dashboards and scorecards provide instant insights into energy consumption and cost.
4. AI Integration: GenAI tools assist with best practices and recommendations for energy optimization.



Belden

Edge2Web

aws

Solution Brief

Contact us for more information about
Belden Horizon Factory Insights: Energy Use Optimization

About Belden

Belden Inc. delivers the infrastructure that makes the digital journey simpler, smarter and secure. We're moving beyond connectivity, from what we make to what we make possible through a performance-driven portfolio, forward-thinking expertise and purpose-built solutions. With a legacy of quality and reliability spanning 120-plus years, we have a strong foundation to continue building the future. We are headquartered in St. Louis and have manufacturing capabilities in North America, Europe, Asia, and Africa.

For more information, visit us at:
belden.com

follow us on

Belden

© 2025 | Belden and its affiliated companies claim and reserves all rights to its graphic images and text, trade names and trademarks, logos, service names, and similar proprietary marks, and any other intellectual property rights associated with this publication. BELDEN® and other distinctive identifiers of Belden and its affiliated companies as used herein are or may be pending or registered or unregistered trademarks of Belden, or its affiliates, in the United States and/or other jurisdictions throughout the world. Belden's trade names, trademarks, logos, service names, and similar proprietary marks shall not be reprinted or displayed without Belden's or its affiliated companies' permission and/or in any form inconsistent with Belden's business interests. Belden reserves the right to demand the discontinuation of any improper use at any time.