

Unify Systems and Data — From the Edge to Enterprise: Put the Power of Smart Manufacturing to Work



The factory of the future — where production lines operate in seamless precision — once seemed like a far-off dream.

But it's coming to life in factories around the world thanks to smart manufacturing.

Harnessing automation, AI, and the internet of things (IoT) has sparked the smart manufacturing revolution. However, the shift isn't as easy as flipping a switch. Manufacturers need to start with a vision, then unite systems from the edge to the

enterprise to extract, analyze, and act on factory floor data and to power breakthrough production efficiencies.

But the factory of the future isn't all about technology. Keeping a human-in-the-loop focus ensures that human ingenuity is always part of the equation, even as innovations like AI and machine learning (ML) play a bigger role in manufacturing.

CHALLENGE

Accelerate insight by uniting data across IT and OT

For many manufacturers, the journey to smart manufacturing begins with excitement and promise. But bumps in the road can stall forward momentum. Among them, deeply embedded legacy equipment on the factory floor that was never designed to connect to anything. Sensors can link older machinery to newer systems, but incompatible integrations can still block success. Even implementing customized solutions can result in trading one technical trap for another.

Another challenge (and opportunity) is the sheer volume of data collected from sensors and systems in modern factories. Without a way to unite, harmonize, and analyze all this data, it's easy to overwhelm teams with too much information. And, as machines, sensors, and robots exchange data across networks, the potential for cyber breaches climbs steadily higher.

SOLUTION

Splunk for manufacturing

Today, manufacturers are increasing investment in digital operations to support the push to smart manufacturing. The pressure to digitize can lead organizations to deploy point solutions addressing specific IT, OT, or IoT tasks.

Often, these solutions can't share data with other factory floor components or enterprise systems. Plus, manufacturers need to connect legacy production equipment, adding another layer of integration and data management complexity.

This is the problem Splunk solves. Splunk provides complete edge-to-enterprise visibility to improve operational efficiency, gain actionable insights, prevent outages, and make informed decisions faster. With Splunk, manufacturers become digitally resilient organizations that can secure and seamlessly integrate IT, OT, and IoT data to improve its cybersecurity posture and get production visibility across the factory floor. That way, teams can work from a common platform to discover and remedy both technical glitches and cybersecurity threats and issues fast to prevent production slowdowns and reap the full benefits of smart manufacturing. For example, monitoring the temperature of devices in a manufacturing setting is critical for ensuring operational efficiency and preventing potential issues such as system overheating or outages. This 'simple' task may combine data on room temperature, power consumption, and device temperature to understand the root cause of a device that is running hot.

Integrate data across IT and OT systems — including data that lives at the edge

Factory floor machines generate enormous amounts of data every day. Traditionally, manufacturers didn't always put this data to work and relied on burdensome manual practices when they did. The result: uncovering the root cause of any production issues was painfully slow.

Now, as manufacturers add new systems and integrate old ones — and bring IT and OT together — they face a new data conundrum. Multiple formats make it hard to relate data across systems and make meaning of it all. By bringing all data together into a common platform, teams can pinpoint issues and fix them before disruptions happen. This approach also surfaces new and previously untapped insights and optimizations across processes, production, and quality.



We're struggling to correlate data from different manufacturing systems to drive informed action.

With Splunk, organizations can integrate across IT/OT systems, allowing for broader insights at the edge and awareness across operations. Splunk's platform can support the vertical integration of data that has been historically hard to access across siloed IT and OT systems and can integrate even systems that live at the edge, enabling improved decision-making. Manufacturers can analyze real-time and historical data to optimize inventory levels, reduce waste, and forecast demand with greater accuracy.

Achieve comprehensive data visibility across industrial assets, systems, and equipment

Despite recognizing the value of smart manufacturing, some manufacturers find it hard to keep up with the rapid pace of technological change. At the same time, manufacturers are still ironing out IT/OT convergence gaps and often rely heavily on manual intervention to get work done.

For manufacturers, the influx of modern technologies and persistent IT/OT disconnects result in an abundance of tools that don't work well together. The way forward means ingesting data from disparate systems to deliver insights on a centralized, single platform to streamline key workflows and allow teams to do more, faster.



I need to unite manual systems to improve performance and reduce manual intervention.

Splunk helps bridge the technology divide with edge-to-enterprise visibility. When manufacturers use Splunk to see across their entire landscape — including IT, OT, ERP, supply chain, and more — they can unlock new innovations and efficiencies. Instead of struggling with disparate systems and manual workarounds, teams can collaborate to solve issues in a unified platform. Teams can tap data to streamline production schedules, minimize downtime, and meet production targets more effectively.

Use AI and ML to detect anomalies and analyze events and performance

AI and ML have claimed the spotlight, but manufacturers are still grappling with the role these innovations play in their operations. Most are eyeing ways for these technologies to help sift through vast amounts of IT/OT data to separate signals from noise. By employing AI/ML to streamline data analysis, they can speed informed decision making and keep production lines running.

Today, forward-focused manufacturers are embracing AI/ML in anomaly detection and predictive analytics to minimize downtime. With innovative, guided workflows, teams can act confidently to resolve issues across the hybrid IT/OT landscape.



We aren't sure how to use AI and ML to advance our production capabilities.

Splunk harnesses the power of AI and ML across both security and observability. Using ML, Splunk can detect anomalies and perform predictive analytics, fine-tuned to each organization's specific workflow and environment. Instead of operating in reactive mode, manufacturers can perform predictive testing to proactively identify potential issues before they impact production or product quality. Splunk also improves visibility across systems, making it easier to correlate events and remediate issues.

Manufacturing organizations need to prevent equipment failure and minimize unexpected downtime. Traditionally, they've relied on scheduled maintenance as a preventative measure for this situation, but this approach can result in unnecessary replacement of components that are still functionally optimally. By contrast, predictive analytics uses ML algorithms trained with industrial data to project equipment breakdowns, reducing wasted repairs while protecting uptime.

Real results from real customers

CHALLENGE

Manufacturing for Bosch's advanced lambda sensors required up to three weeks lead time and many different data formats that had to be manually correlated using complex SQL queries and huge Excel spreadsheets.

RESULTS

With Splunk, Bosch manufactures products with efficiency, slashing core-analysis time from 15 minutes to 20-90 seconds while allowing every staff member — not just technologists — to complete their own queries.

OUTCOMES



20-90 seconds to run a query versus
15 minutes previously



All employees, not just technologists, can now
query data, leading to transparency of what
happens on the shop floor



80+ critical alerts implemented by Bosch
Manufacturing Solutions GmbH customers,
leading to very high customer satisfaction



Thanks to Splunk, we get
deep insight into our processes.
This transparency assures
the team uses data to
make all their decisions for
further improvement.

Claus Giehl,

Industry 4.0 Innovation and Product Manager,
Bosch Manufacturing Solutions



Real results from real customers

CHALLENGE

Known for high quality, BMW Group wanted to increase individual vehicle quality further by detecting more error patterns with the same testing resources and correcting issues during assembly.

RESULTS

With Splunk, BMW Group integrates machine learning models and data for predictive testing that identifies potential quality issues to be addressed during assembly by specific vehicle configurations.

OUTCOMES



Operationalizes Jupyter notebook machine learning models and data flowing to Splunk, enabling predictive testing and visualization that improves cost, quality, and productivity



Increases transparency and supports decision-making, improving the entire manufacturing process by bringing analytics as close as possible to production



Accelerates neural network training and reduces modeling compute times from 20 minutes to a few seconds, enabling fast iterations that explore different parameters



Splunk fits our organizational and technical requirements very well, offering the flexibility and openness needed by researchers and developers to put ideas into practice.

Andreas Schoch,
Innovation Manager, BMW Group





Advance smart manufacturing to drive digital resilience

Splunk bridges traditional IT and OT silos so manufacturers advance smart manufacturing and accelerate production. With Splunk, manufacturers can integrate data from the edge to the enterprise, use AI and ML to enhance performance, and unite systems to reduce manual effort. Teams can act swiftly to detect issues that could cause production slowdowns and manage potential disruptions proactively to boost digital resilience.

Visit splunk.com/manufacturing for more information or contact Splunk to arrange an in-depth review of your goals and challenges.



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