The bridge to possible

Cisco Manufacturing Thought Leadership

Visibility and resilience

The bridge to possible

Trend overview

It is clear the future is uncertain. The pandemic saw to that when it changed the world forever. Shock on the demand and supply sides has impacted industry over the past quarters, contributing to acute degradation of customer satisfaction. Analysis required to find root causes of poor performance is time-consuming. The process relies on only a few examples instead of real visibility of manufacturing processes, machinery, material, and manpower.

Some key questions are: How can manufacturers contain customer satisfaction without excessive overstock? How can manufacturers better predict the output of manufacturing? What is the impact of manpower, materials, and methods on Overall Equipment Effectiveness (OEE)? Could there be a link between IT-OT infrastructure and manufacturing visibility and resilience?

Manufacturers are meeting this disruption by adopting a digital-first model, and many plan on accelerating their technology transformation to power real-time visibility and execution.

- By 2023, 30% of manufacturers will enhance their shop floor digital twin with real-time signal transponder data, leading to an 80% reduction in logistic bottlenecks in shop floor and storage areas.

  (Source: IDC FutureScape: **Worldwide Manufacturing 2021 Predictions**)

Insights and action: Quickly see the source of problems, for swift remediation

Data can unlock new values in terms of business and operating models. Manufacturers need to apply data-driven technology to connect, collect, transform, and analyze data from myriad materials, machines, processes, and manpower on the production floor.

Much manufacturing visibility and insight can be developed through analysis of the real-time stream of data. Looking through that stream, we can identify patterns in materials, machines, processes, and labor that lead to delays, quality issues, or cost implications. This visibility includes material variance insight, overall equipment effectiveness insight, overall workforce effectiveness insight, and more.

This insight and visibility can be leveraged to quickly identify problem sources for swift remediation.

Establish a scalable infrastructure: Reliability, assurance, automation, and security

The architecture to enable manufacturing visibility and agility is complicated. We have identified two major decision points that require immediate attention:

Industry Point Of View (POV)

In a complex manufacturing supply chain, one weak link can bring an entire plant down. How can manufacturers achieve perfect order while overachieving customer satisfaction? How can this high performance be sustained, even in time of disruptions? The answer is found in manufacturing visibility and resilience.

The bridge to possible

Build reliable and pervasive connectivity infrastructure

Connectivity is a prerequisite for collecting data from equipment, people, and the environment. That's why connectivity infrastructure forms the backbone of most use cases and acts as the highway on which data travels between people and machines. Depending on use cases that range from basic wireless sensor networks to software-defined networking, or programmable networks for large-scale management, there is a need for varying levels of sophistication. Manufacturers must assess the following when selecting the infrastructure:

- Reliability, assurance, and automation (the biggest considerations for connectivity and data transmission).
- Operability in various plant conditions (for example, outdoor locations exposed to adverse climates, ease of implementing rules-based configurations across sites, and control over network access are key considerations).

Install intelligent E2E cyber-security

Data is a manufacturer's intellectual property and plays a central role in implementing manufacturing visibility and resilience. Extracting, moving, computing, visualizing, and analyzing data will involve security risks. The entire production value chain and network must be secured against threats. Manufacturers can achieve this with firewalls, intrusion detection systems, intrusion prevention systems, and endpoint protection. In addition, systems must continuously self-monitor to identify and isolate potential breaches. Cybersecurity is a game of scale: the higher the number of users, the greater the exposure to threats, and the more effective the responses.

Summary/Conclusion

Manufacturing visibility and resilience offer great promise for manufacturers to optimize business operations and, at the same time, improve customer satisfaction.

The key to pervasive manufacturing visibility and resilience lies in the scalable infrastructure that delivers factory data in real time. Without data that is securely extracted from myriad sources and delivered to the right application at the right time, little optimization can happen.

Every key manufacturing assurance is represented by the same and aligned set of infrastructure assurances. They are inseparable. Therefore, manufacturing IT-OT teams need to work together to design, build, and operate a scalable infrastructure that includes devices and their management. Teams must step up and deliver on vital requirements of scalability, availability, reliability, performance, visibility, and end-to-end security. Or, put simply, they must deliver on the same requirements that enterprise networks have been challenged with and solving over the last decade.

For more information

To learn more about manufacturing, visit the following:

- Cisco in manufacturing
- Industrial IoT solutions for manufacturing
- Manufacturing portfolio explore
- Customer story: Armstrong International

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