CASE STUDY

Major Aerospace & Defense Company Taps IoT Sensor Solution to Boost Productivity, Visibility and Supply Chain Management

An Inside Look at BAE Systems' Rollout of Enterprise Sensor Integration from Boeing's Tapestry Solutions

Smart factories are fast becoming a reality as manufacturers leverage Internet of Things (IoT) sensor technologies to connect people, data and processes across their factories and supply chains. This case study examines how BAE Systems is achieving IoT connectivity with the help of Enterprise Sensor Integration (ESI) from Tapestry Solutions, a Boeing Company.

Pictured above are BAE Systems' team members during production.

THE CHALLENGE

BAE Systems, an international defense, aerospace and security company, had an immediate need to find new technologies and techniques to accelerate manufacturing production processes in response to increased customer demands. The primary task was to replace existing manual processes with an automated, Radio Frequency Identification (RFID) solution to efficiently track and manage inventory, assets/tools and workflow processes.

The company hoped to attain a near-real-time view into its assets and processes, and integrate that data with its existing sensor technologies and Enterprise Resource Planning (ERP) systems. BAE Systems also wanted the solution to have sufficient scalability to grow with evolving enterprise needs.

Previously, the company had a largely manual process for tracking and managing inventory, assets and tools, as well as enhancing workflow on the assembly floor. It used a manual barcode scanning process to track and replenish inventory at multiple sites. Procurement teams released orders manually, which often resulted in longer than desired lead times.

THE APPROACH

Tapestry Solutions set out to provide an Internet of Things (IoT) solution for BAE Systems, leveraging RFID as well as Enterprise Sensor Integration technology that it implemented across 50 factories for Boeing, its parent company.

ESI is a software solution that connects myriad sensors and data sources onto a common platform. As a sensor-agnostic solution, ESI can be integrated with an organization's legacy RFID and sensor systems – regardless of hardware or sensor types or brands.

ESI integrates sensor data with customer enterprise systems, such as ERPs, to drive automation and efficiencies. ESI can operate in the cloud or on dedicated, on-premise servers.

Tapestry commenced work at BAE Systems in July 2017, and successfully implemented the technology by 2018 at the company's Electronic Warfare Integrated Manufacturing Center (EW-IMC) in Nashua, New Hampshire, followed by other sites. The installation supported the following business use cases: automated material replenishment, asset and calibratable tool tracking, and work-in-process (WIP) tracking.

THE RESULTS

BAE Systems reports that the ESI-enabled RFID solution has significantly increased production capability at its factories and through its supply chain. The technology provides BAE Systems with the capability to track 200,000+ assets, 30,000 parts, and an estimated 6,500 work orders at its facilities.

Material Management

To track and replenish materials via RFID, BAE Systems selected a TwinBin RFID Kanban system with specialized material-storage containers. The system is used in conjunction with customized mechanical RFID flags,. The system sends signals to suppliers once the stock level has been depleted to the determined re-order level.

Orders are automatically generated every night, and the parts arrive at a pre-determined time at the material center. This has enabled BAE Systems to transform from a "push" scheduling process to a "pull," where there is a just-in-time inventory flow through its supply chain.

Tools & Asset Management

For asset and tool tracking, BAE Systems has applied UHF RFID tags to tools used during the assembly process. The system can also track items as they enter and return from specific zones with associated alerts. This enables users to identify any misplaced tools or materials. ESI can also monitor recalibration due dates on equipment.

Work in Progress

For WIP, RFID tags are applied to printed work orders as they are initiated, which enables tracking of each open order as it moves through the production floor. The work order then follows the movement of each product as it proceeds through the assembly process, allowing the company to track an order's status and identify possible bottlenecks.

For more information about ESI, please contact Tapestry at marketing@tapestrysolutions.com