TEGO

Smart Factory Case Study

One global aerospace manufacturer sought a smart factory solution to improve efficiency, productivity and protect profit margin at their $1 Billion a year facility.

The Hidden Cost of Operational Waste in Manufacturing

Operational waste is a challenge for all manufacturers, significantly impacting profitability and competitiveness. In fact, manufacturers experience, on average, a 20% loss in production due to unexpected downtime. Waste is a general term but it is often caused by relying on outdated and time consuming processes like manual data collection, which can further cascade into additional scheduling and labor inefficiencies.

These inefficiencies are compounded by poor communication and a lack of real-time data, leaving teams reactive to problems rather than proactively preventing them. Operational teams express similar complaints, which point to the underlying role of waste and how it impacts daily activities. Here are some of the most common operational complaints often heard:

- *Poor Visibility*: Operational teams lack a clear view of the status of orders in progress.
- *Shifting Bottlenecks*: Production schedules aren't accurate because they have difficulty predicting and managing bottlenecks caused by changes in product mix and volume.
- *Expediting and Fire Drills*: Frequent last-minute efforts to expedite orders or address unexpected issues on the shop floor means other work is put on hold.
- *No Electronic Records*: The absence of electronic records for production events makes it impossible to track performance for each order.
- *Scheduling Inaccuracy*: A production schedule that is consistently incorrect leads employees to make decisions based on limited data rather than a reliable plan.

No matter how you look at it, waste erodes profit margin and makes it difficult for companies to be competitive on a global scale.

Bridging the Gap: Why Real-Time Data is Critical

3 Hours/Day

On average 3 hours/day are 'wasted,' as teams gather production data and progress updates via manual extraction from siloed programs, which then must be combined with additional information in spreadsheets to be ready for operational use.

A global aerospace manufacturer has to manage a complex, multi-step production process with stringent quality and safety standards. Their production environment is further complicated by the need for meticulous material and inventory control, as these are significant cost centers.

This aerospace manufacturer tracks thousands of parts per work order, from creation in their Enterprise Resource Planning (ERP) system to the final product. All items are kitted and tracked across a 250,000 square-foot production space. While the ERP manages financial and purchasing aspects, the shop floor relies on manual data entry, leading to a major disconnect between production activities and the ERP/Manufacturing Execution Systems (MES).

This manual process creates constant operational issues including:

- **Work In Process (WIP) Pile-Up**: Production is reactive, not proactive, leading to bottlenecks as materials and WIP sit idle, waiting for parts or a skilled worker.
- **Inventory Inaccuracy**: Timely parts are unpredictable, and manual, monthly cycle counts hinder real-time visibility.

Shift changes further compound these inefficiencies. A cross-functional team spends three hours per day manually gathering and compiling production data from siloed systems into spreadsheets. This time-consuming, non-value-added task is critical for communicating with the next shift, but it could be eliminated with automated, integrated data systems.

The Solution: A Digital Platform Delivering A Unified View of Manufacturing

Senior management appreciates that to meet future production goals, the organization had to adopt not just an automated, but also a digital solution. This new system addresses key operational challenges, including the lack of real-time visibility, inefficient manual processes, and siloed data. The goal is to create a seamless flow of information that connects the entire production floor.

Real-Time Visibility and Integrated Reporting

The solution digitizes and automates visibility for all physical items, from incoming materials to work-in-progress (WIP) on the shop floor. By connecting digital data to every part, component, and kit cart, the entire production value chain becomes smart and transparent. This provides highly accurate performance metrics, helping teams plan more effectively and significantly reduce costly unplanned downtime. Empowered with this real-time data, teams can track the exact location and processes step of items and ensure all work is completed on time and on budget.

The solution includes both the hardware and software needed to automate processes from receiving to shipping, as well as tracking WIP and managing inventory. It seamlessly integrates with existing enterprise systems, such as ERP and MES, allowing for a two-way flow of data. This enterprise-wide network provides authorized personnel with a clear, real-time view of performance, access to reports, and oversight of all processes. Digital dashboards on the shop floor deliver instant visual feedback to staff, helping them identify and address concerns before they become problems.
By providing automated performance metrics directly from the production floor, this new system fuels continuous improvement initiatives. Managers will gain deeper insights into inventory turnover, capital management, and staffing, transforming reactive operations into a proactive and efficient one.

Return on Investment

Once management agreed upon the scope and budget required for this smart factory solution, deployment took six weeks. At no time during the deployment process, which included hardware installation and software testing, were production floor activities interrupted.

Eight weeks after installation, the continuous improvement team requested an expansion of the solution to include a four-story, on-location warehouse feeding inventory for the production floor.

The solution paid itself back within ten months.

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