Shop Floor Data Collection is Critical to Being a Global Player

Get it right using experienced pros to design and implement your system
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Data collection used to be associated with barcode readers used in shipping and receiving to speed data entry and confirm orders. Today, data collection systems are used on a much larger scale, throughout the entire supply chain and in the production and warehousing operation, to enable manufacturers to operate more efficiently and profitably on a much larger scale.

Moreover, data collection systems integrated with manufacturing execution systems (MES) as part of a comprehensive manufacturing operations management (MOM) strategy allows manufacturers to continuously improve process and product quality, and to win global contracts so that they can remain a viable company in a globally competitive landscape.

It truly pays off to consider how shop floor data fits into your strategic initiatives, then to work with experienced practitioners to deploy a MOM strategy that best utilizes this grassroots data. Shop floor data collection is a critical building block for the following best practices employed by leading manufacturers to assure themselves a place in a highly competitive global market.

1. Remaining Competitive with Parts Tracking and Traceability

Data collection is far more now than reading barcodes as parts come in and go out of your facility. Step-by-step parts movement tracking and full parts traceability are now essential functionality.

Parts tracking throughout a product’s entire lifecycle – as-designed, as-built, as-maintained, and as-disposed – is increasingly being demanded by regulators, prime contractors and user communities. You can’t win some contracts without customer compliant labeling. You can’t supply DoD contracts without the ability to submit to the UID registry. You can’t sell into the European Union (EU) without cradle-grave parts tracking compliant with their electronics waste management regulation, WEEE.

A good shop floor data collection system does more than let a worker input quantities produced. A comprehensive shop floor data collection system is the foundation for applications that:

- Tracks and initiates parts movement, to make sure parts are where they’re needed at the point-of-consumption, when they’re needed there.
Traces each unique part from its origin in the supply chain, through every stage of production, into the customer’s hands, and when it’s returned to the manufacturer for maintenance and/or disposal.

- Produces a product genealogy, containing the part numbers and production data for every part and subassembly contained within it.

- Connects the shop floor to the top floor. It provides visibility to corporate systems across multiple manufacturing locations and supply chain partners in real-time in a networked data management environment.

Soon, in order to bid and win on the manufacturing stage, traceability won’t be an option. It will be a contractual obligation.

2. Maintaining Customer Loyalty with Responsiveness and Faster Fulfillment

A good data collection system can be the foundation for improved customer satisfaction initiatives.

Today, customers demand speed and agility. Here are some examples of how customers’ order fulfillment expectations have changed over the past decades:

- In the early ‘90s, industrial order fulfillment was typically 3-5 weeks. By the end of the ‘90s, order fulfillment in 1-3 weeks was more common. Now, industrial customer requirements of 1-3 days are not uncommon.

- Similarly, consumers used to expect orders to be filled within 7-8 days in the early ‘90s. It crept down to 3-5 day expectation by the end of the ‘90s, and expectation is currently for same day order fulfillment.

Warehouse data collection systems have enabled faster order fulfillment of finished goods. Now, shop floor data collection is allowing manufacturers to come closer to same-day order fulfillment straight off the production line.
In addition to the ability to deliver quickly, a good shop floor data collection system also enables the ability to react to changes in the order specifications and demand. With real-time visibility into the stage of production, manufacturers can quickly respond to customers regarding the impact of change requests and what the adjusted delivery dates will be.

It’s this high level of responsiveness, and the agility to react to change and maintain quick deliveries that cement customer loyalty and future contracts.

3. Improved Profitability through Statistical Process Control

The cornerstone of Statistical Process Control in lean manufacturing is measurement: measurement of product quality, process alignment, productivity and waste. Shop floor data collection is critical to planning and monitoring the success of improvement initiatives. Any resultant boost to productivity goes straight to the bottom line. Further, reducing rework and recall due to product quality issues, as well as material and labor waste, preventing an insidious erosion of profits that often dog a manufacturer’s profitability.

With shop floor measurement data, quality teams work to continuously reduce the standard deviation on product quality. Alerts for production and quality deviation or non-conformance trigger immediate attention and fixes – before rework or recall is necessary.

Operations and process engineers analyze and plan adjustments to incorporate best practices into production and to optimize productivity. Shop floor data collection systems can also serve as operator terminals where laborers receive standardized process instruction using directed workflow, input is validated to ensure the task is completed correctly before proceeding to the next step. Process standardization and validation improves product quality, provides an audit trail and traceability, and provides feedback on the stage of order completion.

Ultimately, the data collected from the shop floor contributes to higher margin, higher quality products produced at peak productivity with minimal waste, with visibility to improve customer responsiveness.
4. Better Management and Stakeholder Confidence with Timely, Accurate Report

Real-time shop floor data give your managers more information with which to make better decisions. Reporting is not limited to an ERP’s historical mode of reporting, but instead can report real-time statistics and KPIs on dashboards for managers to continuously monitor operations. Accurate, real-time data about all aspects of your manufacturing operation is available for timely management reporting and insightful analysis.

Your ability to quickly access accurate, real-time data will instill greater confidence in you with your customers, supply chain partners, creditors and regulators. Whether it’s consistently accurate inventory and order information for bank reports, or timely compliance reports for customers and regulators – you’ll spend less time and garner more respect for being a well-managed company.
Hire Experience for Best Results

Building a comprehensive shop floor data collection system integrated into a secure and robust data management network that feeds MES, ERP and other corporate systems across multiple manufacturing locations requires experience and know-how.

A well-designed shop floor data collection system ties into a company's strategic initiatives. Striving for the fastest fulfillment and best customer service, the highest quality, and the lowest costs through lean manufacturing requires a well-designed data collection system that feeds the measurement and control of these initiatives. Experienced designers, such as those at Epic Data, can draw on best practices in numerous industries to design a data collection system that helps a manufacturer achieve their corporate goals.

Some of the implementation considerations include:

- **The application software to put shop floor data to use**, whether it's for manufacturing execution, parts and labor tracking, or compliance reporting. Epic Data's Integra MES Suite (IntegraTrak, IntegraTLC, and IntegraProduction) brings together shop floor data into a comprehensive suite of MES functionality.

- **Integration and interface to ERP, MOM and warehousing systems**. Providing real-time data for faster responsiveness, linking multiple facilities for coordination and collaboration, and amassing valuable corporate knowledge assets.

- **Easy-to-use user interface that is robust and functional for the shop floor**. Epic Data's MPT 9600 is a rugged multi-purpose terminal with touch screen interface and ports for numerous input devices including barcode and card readers, making it easy to use and withstand the rigors of the shop floor.

- **Networking infrastructure and data management**. To ensure data integrity, availability and synchronization, Epic Data's IntegraNet serves as the foundation for data collection and distribution solutions.
• **Knowledge of manufacturing best practices** and **auto ID technology and products**. Knowledge that can only be gained through years of experience and hundreds of projects behind you.

• **Implementation, integration and training plan**. Essential to a smooth project, transition from previous systems, user adoption and familiarity, and successful management utilization.

**About the Author**

Alan Foster is Executive Vice President, Product and Services at Epic Data. He has been responsible for the creation, commercialization/productization, manufacturing, deployment and support of information dissemination solutions and data acquisition equipment for enterprise workers for over 20 years. With a great depth of experience in developing data collection technologies such as RFID, bar coding, UID and associated data capture devices and wireless data communications, he has built and delivered applications that enable the constant flow of valuable information to people who need to know.

Alan invites you to contact him to discuss improving your manufacturing operation management and manufacturing information systems.

**About Epic Data**

For 36 years, Epic Data has delivered real-time data collection and production information to discrete manufacturers through turnkey data collection, warehouse management and lean manufacturing operations management solutions. Defense contractors, aerospace, automotive, high technology and industrial equipment & machinery manufacturers employ Epic Data solutions to optimize the ROI of their manufacturing IT infrastructure investments and operations by increasing plant productivity, materials visibility and production velocity.

To make sure you’re harnessing the power of manufacturing operations management systems, make sure you consult the experts. Contact Epic Data at info@epicdata.com or via telephone at:

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