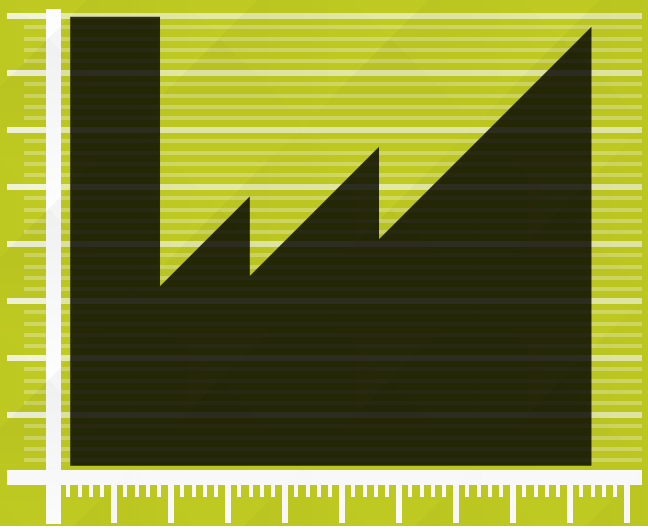


Integrating **Zebra Auto ID solutions** into your existing processes.

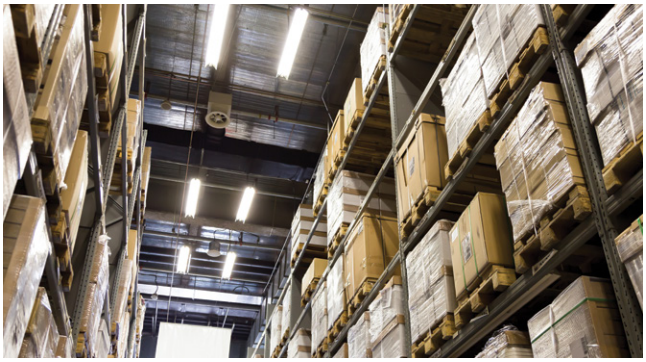
A short guide to integrating Zebra Automatic Identification and Data Capture (AIDC) technologies into existing ERP and WMS systems.

Extracting maximum value from your data.
As the manufacturing sector seeks to find ways to further increase efficiency in operations and adopt even leaner principles and processes, the intrinsic value of data within the value chain is rising.

To gain more information and visibility into operations, many companies depend on Enterprise Resource Planning (ERP), supply chain, Customer Relationship Management (CRM), and other management software. These applications can be highly effective, but won't deliver the results achievable with today's technologies.

Automatic Identification and Data Capture (AIDC) technologies are the means through which these data values can be obtained. AIDC technologies refer specifically to barcode, RFID, GPS and sensory technologies used to 'mark' an item or asset and the adjacent 'interrogation' technologies such as scanners, readers and other infrastructure elements used to read and decode applied content such as a barcode label.

By identifying work streams and processes associated with each stage of the value chain, it is possible to identify how AIDC technologies can be deployed to increase the availability of data and enhance levels of visibility and efficiency within the overall process.



Inbound logistics
Whether it's paper-based or automated, you need to ask yourself whether your current scheduling system provides comprehensive and timely delivery information to gate security staff. How often do vehicles arrive unexpectedly or not arrive at all? How often are they directed to the wrong dock? Do you incur additional costs when vehicles are unloaded further from the desired location than they could be?

A manual or traditional paper-based process relies completely on the receiving team member making the correct observations and confirming go-ahead, and is liable to human error. In busy production sites with multiple gates and docks the flow of vehicles is critical to maintaining lean material flow inside the production facility. Inefficiencies and lack of information here inevitably cause unnecessary cost and delays that filter through the entire facility.

AIDC technologies capture all of the necessary detail concerning delivery type, number, content and destination dock ensuring multiple cross-check reference points against the scheduling system, and giving visibility in real-time of both the vehicle and its load from arrival to exit.

Materials management
Case or shipment labels may not provide enough tracking detail for managing goods once workers enter data into materials inventory, especially for companies that rely on inventory staging for effective workflow. With millions of parts to identify, locate, and move in and out of inventory, item-level and RFID barcoding is essential.

In the best-case scenario, the item's inventory routing instructions are encoded and labelled at the receiving dock, as previously described. Once the item arrives at the warehouse, users can use a mobile device to scan the RFID or barcode label to record its arrival. The host materials control or warehouse management system (WMS) then directs the worker to the optimised putaway location based on the item's size, shelf-life, and predicted consumption schedule. Workers then store the item and scan a separate shelf label to verify the item's placement. Each scan leads the user to the next task and updates the host system.

If the inventory location information was not available for the incoming delivery when it first arrived at the loading dock, it is a simple operation to print that label at the warehouse entrance. Here, companies typically rely on an RFID or barcode label printer that can withstand the rigours of an industrial environment.

Production line applications
Most businesses apply RFID and barcode shipping labels when finished goods leave their facility. The most efficient producers have learned that pushing their identification and tracking systems as far back into the production process as possible provides significant labour and material savings.

Lot tracking enables companies to implement highly efficient lean manufacturing and Business Process Management (BPM) initiatives. Many companies have taken advantage of the technology available that enables them to custom configure products without special order charges or longer lead times. These programmes often rely on flexible manufacturing practices requiring frequent production turns, new levels of Work-in-Process (WIP) tracking, plus more frequent, smaller shipments. Item-level RFID and advanced barcode systems deliver the necessary functionality to meet these requirements.

Accurate quality control
The same best practices and technologies used to track items through various production stages also apply to sample tracking and quality control. When detecting defects, item- or lot-level production visibility enables companies to minimise the number of items for scrap or rework, which can produce substantial labour and materials savings.

Rewritable RFID smart labels provide the opportunity to track products throughout the quality control process. A barcode is used to provide item-tracking information, and production and testing data is stored within the RFID chip, adding new information at each workstation. The entire production life of the component or assembly – from sub-component procurement to production quality control – now becomes accessible with a single scan. The tracking label can also include customised graphics and logos with exceptional clarity.

Staging and shipping
Shipping operations benefit from using the same equipment currently used to produce shipping labels by modifying the system to take advantage of improved production tracking procedures. When production lots or specific items afford traceability through manufacturing, ERP systems can associate them with a specific customer order – a requirement in build-to-order environments.

The flexibility inherent in these labelling systems can be used, for example, to prepare EDI Advance Ship Notices (ASNs), improving customer service while reducing the labour required for preparing shipments.

The system can also enable updating CRM systems in real-time, helping service representatives to answer customer inquiries promptly and accurately. Increasingly, companies are placing their order shipment information on a self-service website for customers to access.

Shipments identified with smart labels bearing traditional label data in text and barcodes give unattended, non line-of-sight identification, verification, and sorting at different points in the supply chain, providing full and effective visibility to the enterprise.

What to think about before deploying
Different auto ID solutions obviously provide different levels of visibility and insight into asset location and production processes. Barcode labeling is a reliable and efficient means of passive, item-level tracking that shows where an item is, but not its status. Active RFID tagging and RTLS solutions provide data around not only location, but also the status of a given asset in a wider context, physically and geographically.

These are solutions to consider if you have any of the following business challenges or characteristics:

- Current asset tracking solutions do not provide the level of visibility required
- There is a large installed base of mission critical or mobile assets used in the operation of the business
- The supply or value chain is complex and comprises multiple product sets or types
- There is a need to reduce order to cash cycle time, improve throughput and streamline processes
- There are significant MRO or compliance requirements
- Employee management and safety is critical to the success of the business

What's the best adoption strategy?
Start small, but don't lose your vision. Focus your initial efforts on addressing one or two less complex business issues, while keeping your overall vision of how the solution can be used throughout your enterprise and value chain in mind. Starting small offers several advantages for the adopting enterprise, including:

- Less risk and investment associated with proving the concept
- ROI is more measurable and time to attain ROI will be faster
- Improves enterprise's level of knowledge based on real world experience
- Simplifies justification for further investment in the solution
- Validates the choice of solution provider
- Facilitates scale, expansion and further integration

Find out more about co-ordinating operations across your sites with our factsheet here, or visit:
www.zebra.com/manufacturing-challenges

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