



## Work-in-Process Tracking

Work-in-process (WIP) tracking is one of the most proven and widespread uses of radio frequency identification (RFID) technology. Process and discrete manufacturers use a variety of RFID labels and tags to route materials through automated production processes, monitor chokepoints, provide real-time updates to manufacturing management systems, communicate configuration instructions and much more. “Best-in-class” manufacturers are three times more likely to use RFID for WIP tracking than other manufacturers, according to research by Aberdeen Group.<sup>1</sup>

Zebra helps deliver the benefits of automated WIP tracking with reliable printer/encoders that create RFID smart labels on demand in challenging production environments. Zebra supports multiple RFID technologies, standards and protocols, and offers numerous label materials and sizes so customers can find the perfect match for their processes.

### Why have thousands of manufacturers installed RFID systems to improve their WIP tracking?

*Because RFID provides highly reliable identification and tracking, even in challenging processes where there is extreme heat, vibration, moisture and chemical exposure.* RFID requires no direct line of sight, so it can provide identification and information in environments where bar code and machine vision systems can't. RFID takes latency out of processes by providing real-time visibility and feedback for proactive management.

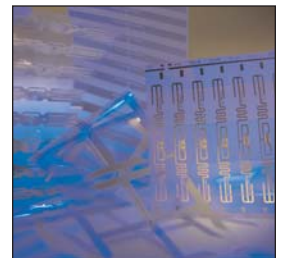
*Because RFID can identify and record components, assemblies and other work-in-process much faster and more accurately than workers can.* This leads to improved throughput, reduced errors and reduced costs. Best-in-class manufacturers with RFID WIP tracking systems reduced labor but improved throughput by at least 10 percent, and reduced process failures by at least 20 percent, according to the Aberdeen Group study.

*Because return on investment is real, attainable and measurable. When labor requirements and errors go down, so do costs.* Closed-loop RFID applications typically provide ROI much faster than mandate-driven labeling projects, and WIP tracking has especially strong ROI potential because of its ability to reduce labor requirements while simultaneously preventing errors, rework and scrap.

*Because RFID tags do more than identify.* RFID tags are rewritable, so they can be updated throughout the production process with configuration information, operator and inspector IDs, quality control test results, data from sensors, time stamps, instructions for material handling or automated assembly systems, lot numbers, authentication codes and other variable information.

### Why do manufacturers around the world rely on Zebra to meet their RFID smart labeling needs?

*Because Zebra produces printers that connect to your enterprise networks and information systems, and smart labels that stand up to your production processes.* Zebra understands that a one-size-fits-all approach doesn't work for RFID. That's why we offer a variety of printer/encoder models, wired and wireless connectivity options, plus convenient interfaces to SAP®, Oracle® and other leading enterprise applications.



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<sup>1</sup>Aberdeen Group “Where’s My Stuff?! Managing Work-in-Process with RFID” July 2007.



*Zebra manufactures the broadest range of RFID smart label printer/encoders, so you can find the model and configuration best suited for efficient integration into your processes and information systems.* Options include rugged industrial printer/encoders that can be installed on a production line, cart-mounted models for mobile labeling, and components that work with automatic label applicators for precise, hands-free label placement.

*There are even more materials options.* We've solved the challenges of developing labels that will provide accurate reads when exposed to chemicals, gases, electrostatic discharge, sunlight, UV light, temperature extremes, harsh production processes and cleanroom environments, and we offer hundreds of stock and custom materials options. All Zebra smart labels are produced in ISO 9001-certified facilities and undergo extensive quality control testing to ensure reliable performance.

*Because Zebra supports multiple RFID technologies.* Zebra has smart label printer/encoders for UHF (860-960 MHz) and HF (13.56 MHz) technologies, and WhereNet, a Zebra Technologies company, is a leading provider of real-time locating systems (RTLS). Our printer/encoders and smart label media support EPCglobal Gen 2, ISO 18000, ISO 15693 and other RFID standards for item management and traceability. Dozens of RFID inlay options from multiple leading chip manufacturers are available so you can match your smart labels to your performance needs.

*Because Zebra® printers are proven on production lines and other industrial environments all over the world.* Zebra printers have a reputation for being rugged and reliable. Our advanced printer monitoring and management tools help keep them that way. The ZebraLink™ Solutions suite of networking, software and firmware products provides real-time remote monitoring and hands-free management for Zebra printers networked anywhere in your organization. Zebra's solutions let a printer contact you if error conditions exist-by alert message delivered by e-mail, cell phone or pager. Couple this with the powerful remote troubleshooting capabilities and you'll minimize printer downtime.

To learn more, visit [www.zebra.com](http://www.zebra.com) and download the white papers:

- Unchaining the Value of RFID: How Closed-Loop Systems Provide Flexibility and Fast ROI
- Increasing Profits and Productivity: Accurate Asset Tracking and Management with Bar Coding and RFID

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#14358L(9/07)



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GSA#: GS-35F-0268N