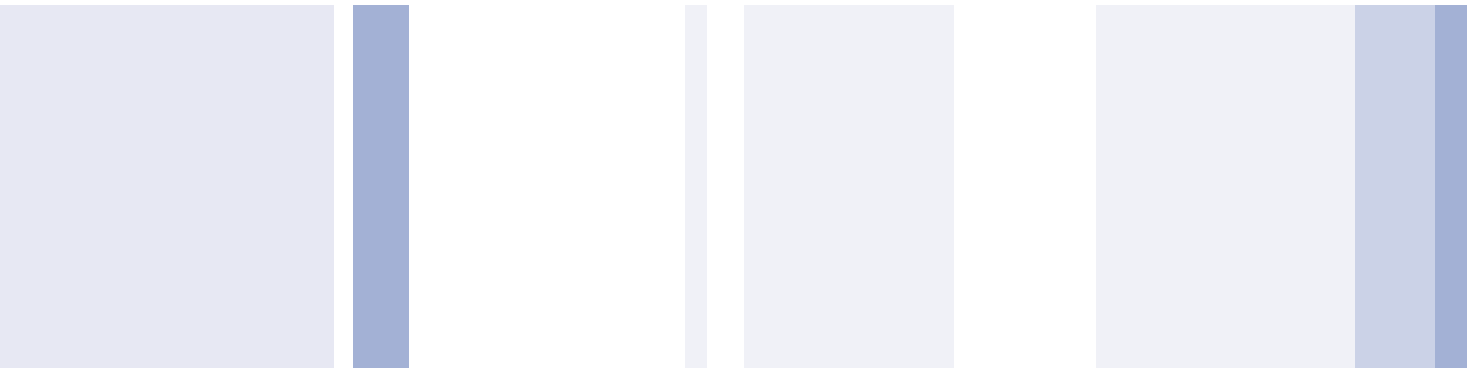
Improving production and operation systems with RFID

IBM

Taking manufacturing to the next level: RFID Work-in-Process solutions from IBM

ON DEMAND BUSINESS™



RFID: A proven technology changing the factory floor

Today the most challenging tasks for industrial manufacturers are the production of reliable products and getting them to market quickly. Faced with a variety of assembly processes, intricate logistics in executing custom orders, and countless numbers of parts and tools moving about the factory, the production floor has become a complex and error-prone environment. Everyone feels the pressure to cut costs by winning the battle against manufacturing inefficiency.

RFID (radio frequency identification) technology is emerging as a powerful and proven tool for streamlining production and inventory management on factory floors of all sizes. Most often associated

with supply chain management, RFID application areas are growing rapidly. Their evolution within the four walls of the factory is transforming the way manufacturers do business. Automakers, electronics manufacturers, and aerospace and defense companies are among the leaders in moving RFID out of test labs and onto the factory floor.

Today, with the help of IBM, many manufacturers are using RFID technology to restructure plant floor work-in-process operations. The technology helps improve inventory visibility, integrate suppliers more seamlessly into the business process, and improve customer satisfaction. It can minimize rework, reduce line stoppages, and make it possible to replenish just-in-time materials to the production line. RFID tags and readers can even automate assembly line processes—helping to reduce labor, costs and errors on the plant floor.

IBM RFID Work-in-Process for the On Demand Business

By implementing RFID Work-in-Process solutions from IBM, manufacturers have a roadmap towards becoming an On Demand Business—a model that enables enterprises to respond with flexibility and speed to virtually any customer requirement, market opportunity or external threat. These capabilities apply especially well to RFID manufacturing line initiatives. They help enable organizations to innovate, capture value, make better use of resources, and improve overall decision-making.

RFID technology is based on the use of radio waves to transfer data using tags and readers. RFID applications can respond dynamically, with little or no human intervention, helping to provide information that is highly accurate, objective, reliable, totally auditable—and delivered as needed.

When smart RFID tags are introduced into the production environment—at the item, case or pallet level—RFID offers a self-identification mechanism for achieving visibility of work-in-process on the plant floor. Once integrated with business processes and back-end applications, RFID Work-in-Process solutions from IBM can help you make more informed decisions about production, inventory stock and delivery dates in order to quickly adapt to fluctuating market demands.

Expanded applications of RFID in manufacturing

RFID Work-in-Process solutions from IBM can be applied to a variety of manufacturing processes. However, recognizing where to implement RFID in the factory and how to integrate it with back-end systems is crucial to short- and long-term success. Today IBM is working with customers to implement RFID solutions and help them realize business benefits faster.

RFID for Plant Floor Asset Tracking

In the assembly management process, tracking tools and equipment is vital to a well-run production floor. With the use of RFID tags and readers, it becomes possible for manufacturers to automatically detect the whereabouts of tools and assets, improving efficiency and reducing loss. With RFID asset tracking, you can benefit from improved data collection and tighter controls throughout the production floor as well.

RFID for Plant Floor Inventory Management

When RFID is applied to inventory management solutions, the technology helps ensure accurate replenishment of materials to feed production processes, keeping the line moving efficiently and decreasing downtime. It also aids in parts sequencing, helping to reduce labor and paperwork by providing just-in-time parts to the assembly line. Manufacturers using RFID for inventory control can benefit from a reduction in labor in retrieving production batches, which bar codes cannot do.

RFID for Plant Floor Assembly Automation

RFID allows you to track manufacturing work-in-process during assembly operations. This capability is designed to enable your plant to synchronize the utilization of equipment, manpower and material resources. The key benefit is improved factory-floor efficiency—getting materials to the right place at the right time. In the process, manufacturers often reduce mistakes and labor costs, improve routing information support, enhance assembly-line flexibility for custom orders, and eliminate manual barcode scanning—all of which helps boost productivity and potential profits.

Real-world applications

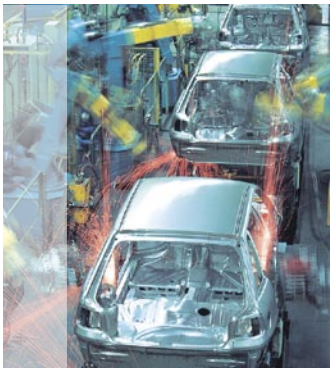
Automotive

Having made its way into millions of cars and trucks through in-vehicle information systems, RFID is quickly moving into automotive and auto parts factories, where it is being employed to trace individual parts, afford multiple levels of error-proofing, trim labor costs and tighten inventory control. Additionally, automakers use RFID for better yard management and vehicle processing, and experience fewer missing vehicles and parts.

Case study: A Fortune 500 auto products manufacturer wants to leverage RFID work-in-process technology to gain a competitive advantage over other original equipment manufacturers. Working with IBM, the company is implementing RFID asset tracking and inventory management solutions. Along with better asset visibility and materials handling, the solutions are expected to bring about a return on investment within 6-8 months.

Electronics

In the electronics industry, the adoption of RFID solutions is capable of providing better production quality and, in turn, higher levels of customer satisfaction. RFID tags in products and components can automate processes and help ensure precision in areas like testing, production, calibration and service. Individual products can be tracked dynamically from inception to completion, making them easy to locate for faster distribution to customers.



Case study: A major mobile communications company is working with IBM on a pilot RFID Test Lab project that is moving the company beyond bar codes and into the next generation of RFID automation for its internal supply chain. The anticipated value to the company is $50 million over five years due to increased sales revenue and cost savings. In addition, the company is expected to achieve 10-20% distribution center productivity increases as inventory and shipping accuracy approaches near 100%.

Aerospace and defense

Poor asset utilization, extended lead times and steep cost structures are nothing new to companies in the aerospace and defense industries. Yet today's cost-conscious companies are looking for better ways to manage work-in-process manufacturing. RFID technology helps manufacturers not only with cost and quality control issues, but also in complying with new government regulations.

Case study: A large aerospace company needs to track gauges and instruments as a way to comply with U.S. Government auditing requirements. IBM is helping the manufacturer to develop RFID tracking and real-time location system technologies to track manufacturing assets used within the assembly complex. The expected benefits include reducing the risk of fines as well as improving calibration tracking and the general accountability of gauges and other tools.

A solid platform for IBM's RFID technology

IBM's RFID solutions are based upon a standard software platform, built upon recognized industry standards. The RFID solution for work-in-process manufacturing includes:

- *WebSphere® RFID Premises Server is a middleware product that aggregates, monitors, interprets and escalates RFID events to aid in the detection of critical operational events.*
- *WebSphere RFID Device Infrastructure is an RFID-enabled middleware product that can be incorporated into devices, such as readers and scanners.*
- *WebSphere Business Integration Server software helps you to integrate the information flowing in from the edge of your business with your enterprise and factory floor.*
- *WebSphere Everyplace® Connection Manager software is designed to boost the productivity of plant floor or warehouse workers by giving them highly secure, uninterrupted access to the data they need.*
- *WebSphere Portal software delivers a single point of personalized interaction with applications, content, processes and people.*

Why IBM?

IBM's experience in RFID dates back more than 10 years and spreads across a wide range of technology disciplines and industries, including the integration of RFID Work-in-Process solutions in our own manufacturing environments for improved procedural control and asset tracking. Our dedicated RFID professionals and strong ecosystem of business partners—spanning research and development, consulting, software and hardware—give IBM the multifunctional expertise necessary for complex RFID implementations.

Today IBM is executing an end-to-end RFID solution strategy, from business case to test center services, pilots, implementation and rollout. At the core of this strategy is a comprehensive, flexible solution framework designed to enable the future deployment of improved operational systems, such as work-in-process. This framework can be easily adapted to any size production environment.

IBM supports RFID in manufacturing through early research and involvement in industry standards organizations. Based on this early experience and the depth of the solution components we offer, IBM is uniquely positioned to help you transform your factory and benefit from the latest applications in RFID technology. Together with our business partners, IBM can provide customized, effective RFID plant floor solutions that include hardware, software, services and some of the brightest ideas in the business.

To learn more about RFID Work-in-Process solutions from IBM, please contact your local representative, or visit:

ibm.com/solutions/rfid

The global RFID market for software, hardware and services is expected to exceed $6B by 2010, translating to a growth rate of 362% over US$1.3B in 2004.

Source: RFID in Manufacturing, Datamonitor, May, 2005.

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Produced in the United States of America
08-05

G299-0718-01