



UNDERSTANDING TIRES AT SUN'S RFID TEST CENTER GOODYEAR AND SUN ROLL

Key Features

Organization

The Goodyear Tire & Rubber Company

Key challenges

- Can tags be accurately read without disrupting work processes?
- Will steel used in tire treads block RFID signals?
- Will tags peel off slick tires during shipping?
- Can stacks of tires be read individually?

Solutions

- Tests proved work processes could be found — despite the presence of steel tire belts that block RF signals.
- Tag readers provided excellent accuracy.
- Goodyear developed RFID technology to satisfy customer requirements.

Results

- RFID tag information can be integrated into the tire supply chain, improving inventory visibility.
- RFID tags can be used to meet new government mandates and improve tire performance.

As businesses attempt to streamline their operations by improving asset tracking and inventory management, they are deploying Radio Frequency Identification (RFID) technology throughout their global supply chains. RFID tags, which many think of as the next generation of bar codes, represent a key component of the emerging Electronic Product Code (EPC) Network that will ultimately deliver on those improved business efficiencies.

Because the list of RFID compliance mandates is growing, many suppliers affiliated with large organizations including Wal-Mart, the U.S. Department of Defense (DoD), Target, Albertsons, Metro Stores, HDMA, and others are looking for solutions and partners that can provide immediate answers. The Goodyear Tire & Rubber Company wanted to understand if RFID could be used in its products and supply chain — and turned to Sun Microsystems for answers.

RFID compliance presents technical and logistical challenges

The world's largest tire company, Goodyear is headquartered in Akron, Ohio. The company manufactures tires, engineered rubber products, and chemicals in more than 90 facilities in 28 countries. It ships 220 million tires every year, and employs more than 80,000 people worldwide.



Large customers, like Wal-Mart and the DoD, are mandating RFID for the supply chain. To stay ahead of its customers, Goodyear needed to understand how this technology would work in its products and supply lines. Tires are not shipped in packages or on pallets — each one must be individually tagged. Attaching RFID tags to tires presents some unique challenges, such as what types of tags and tag readers to use, where to place them, how to implement an RFID-enabled warehouse operation, and how to assess tag performance.

In addition, according to Steve Lederer, Goodyear's RFID project manager, "Since our tires have steel belts, and studies have shown that the use of RFID in metal environments is difficult, we had reason to believe there would be challenges." Other technical challenges included the fact that a release agent that helps remove tires from molds also makes the tires so slick, RFID labels do not adhere well. And reinforcements — used to enhance tire durability — absorb RF energy.

Sun's new RFID Test Center provides the perfect environment

To understand and overcome these challenges, Goodyear turned to Sun Microsystems and its 17,000 square-foot RFID test center in Dallas. The goal was to assess RFID tagging and reading capabilities with multiple tags and readers, on tires stacked and handled in a variety of ways. The test center warehouse is fully equipped with RFID-enabled dock doors, conveyor belts, product racks, and other features that make it easy for customers to test products and procedures.

"This is not a demonstration center, but a facility laid out and structured in a simulated environment to help customers go through testing, taking advantage of our expertise and services," said Julie Sarbacker, director of Sun's RFID business unit. Using the center, Sun shows customers how data derived from the use of the RFID tags can be routed through Sun™ servers and storage systems to provide tangible benefits beyond compliance.

The test center provided the perfect environment for experimenting with various tags, readers, printers, wireless infrastructure, enterprise application integration software, warehouse management software, enterprise information system software, and other solutions. "There was a great range of options, and we really didn't want to make an investment without a better understanding of the issues," Lederer explained.

The Sun RFID Test Center was instrumental in helping Goodyear develop an understanding of their RFID options. Using the center's simulated production environment, Goodyear now knows what it will take to comply with RFID mandates from Wal-Mart and the DoD.

Delivering the benefits of RFID technology to the enterprise

Goodyear is exploring ways to use RFID to improve its product and address future supply chain requirements and government mandates. In an effort to combine RFID tags with tire-pressure sensors, Goodyear developed TireIQ, an advanced tire pressure monitoring system. The company wants to create "smart tires" that can warn of potential safety issues by communicating with a vehicle's electronic

command modules. RFID may also help reduce the cost of complying with the Transportation Recall Accountability, and Documentation (TREAD) Act, which Congress passed in 2000 following the Firestone-Ford Explorer recall campaign.

Commercial tires represent a significant investment and generally have a longer life. Companies that buy heavy tires want to make sure the tire pressure is optimal to maximize the life of the tire. Goodyear is evaluating the use of RFID tags combined with temperature and pressure sensors, which are expected to provide an easy way to gather information on the condition of the tire and make adjustments. These tags would be embedded into the tire.

Also, the company is working to meet the emerging demand for RFID tagging on cases and pallets (tires are generally shipped in single units that require individual tags). For Goodyear, internal benefits from tracking the light tires used on automobiles included reduced shipping errors and improved inventory visibility.

The future looks bright for RFID technology and Sun

In an increasingly competitive global market, successful enterprises must manage their assets more efficiently. In combination with EPC, RFID technology helps computers distinctly identify everyday objects so they can be tracked and traced from the moment they leave the factory, to ultimate delivery at the customer's doorstep.

RFID tags are becoming almost as common as UPC bar codes, in part because the Internet offers the kind of ubiquitous, secure, and affordable connectivity required for network RFID and EPC applications. And as volume increases, RFID tags are becoming less expensive to manufacture, making it economically viable for enterprises to tag large volumes of assets for global supply chain applications.

Sun and RFID

As chair of both the MIT Auto-ID Center's Technology Board and the MIT Auto-ID Center's Software Action Group, Sun led industry efforts to drive RFID/EPC standards. As part of EPCglobal, Sun continues to participate and drive those efforts today. Sun is committed to delivering a standards-based infrastructure for deploying enterprise RFID applications. Further, by leveraging Sun's iForceSM Centers, customers can be confident that their RFID solutions will deliver real-time business requirements.

Sun has a long history of grabbing technology "disruptions" and turning them into "disruptive" innovations. The company challenges the status quo, blows up some long-held assumptions, and creates revolutionary technology to benefit its customers. The Java[™] application, Jini[™] network technology, NFS, and Java XML pack are just a few. Now, enterprises can benefit from the disruptive innovations around Auto-ID technology — including RFID — being developed by Sun.

Sun Java[™] System RFID software

Sun Java System RFID Software manages the processing of RFID data and events between RFID readers and tags, as well as back-end supply chain systems such as ERP systems. It provides the foundation for RFID applications that increase asset visibility across supply chains, improve product integrity, and deliver real-time access to inventory information. It is designed to work with leading infrastructure solutions, including the Java Enterprise System.

Java System Tag and Ship Solution

Sun offers a complete, entry-level solution for suppliers that need an immediate RFID solution. The Sun Java System RFID Tag and Ship Solution provides a cost-effective way to meet the minimum requirements set forth in many RFID mandates. A complete solution — including on-site assessment, planning, hardware, software, integration and configuration, and user training — is typically delivered in one week's time.

Sun RFID Retail Compliance Program service offering utilizes the Sun RFID Test Center to address specific requirements of retail suppliers.

Sun industry solution architectures

A set of pretested, RFID-specific architectures that use the Java System RFID Software and third-party products, industry-solution architectures help minimize the risk and increase the return on investment (ROI) of deploying RFID.

Sun iForceSM Partner Program — RFID

Based on an open relationship model, Sun encourages leading third-party partners to integrate their products with the Java System RFID Software. The RFID Toolkit simplifies the creation of RFID device adapters, making it easier to connect devices such as readers and antennas with the Java System RFID Software.

Sun RFID Test Center — Dallas, Texas

Designed to provide a controlled environment that simulates the conditions of an actual distribution center or warehouse as specified by RFID mandates, the Sun RFID Test Center provides practical answers to customers' real-world RFID questions. The Center includes the latest logistics and equipment products from Sun and other leading RFID suppliers.

About Sun Microsystems, Inc.

Since its inception in 1982, customers have continually turned to Sun to help them grow their businesses, lower their costs, and gain competitive advantage. Sun is a leading provider of industrial-strength hardware, software, services, and technologies that make the Net work.

For more information

To learn more about Sun Java System RFID Software, please visit sun.com/rfid.

Platform and requirements

Operating Systems and Platform

- Solaris™ 9, 10 Operating System
- SPARC®, x86, AMD Opteron hardware platforms
- Red Hat Linux Enterprise Server 3.0
- Mozilla™ 1.4, IE 6.0, Netscape™ 7.1

Languages

- I18N Enabled
- L10N: S/T-Chinese, Japanese, Korean

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