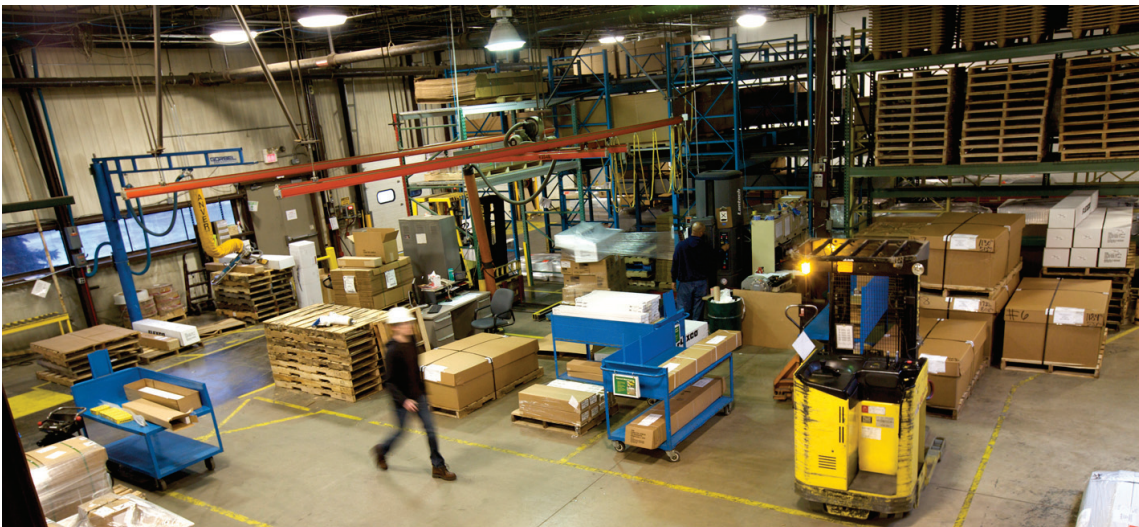# THE EVOLUTION OF INDUSTRIAL RFID APPLICATIONS

DRIVE THE NEXT GENERATION OF INDUSTRIAL RFID READERS

Over the past decade, RFID technology has earned a solid foothold in supply chain management. By using fixed RFID readers to gather data at logical chokepoints like doorways, dock doors and conveyors, companies in virtually every industry have learned that they can save time and improve efficiency at every stage of product handling, from receiving to inventory counting to pick/pack/ship.

In fact, as retail adoption grows and RFID continues to demonstrate its value, the demands on RFID technology are increasing.

THE SITUATION: SUCCESS

RFID technology has proven an invaluable tool in enabling a faster, smarter supply chain – from the manufacturing center, through transportation and distribution, all the way to the retail outlet. Across a wide variety of industries, RFID's fast, automatic and accurate data capture has already replaced many manual counting and tracking processes, delivering near 100% inventory accuracy while slashing the time and labor involved. Armed with the more reliable, real-time data RFID provides, companies are making smarter choices to maximize the value of their capital and resources. They are reducing overstocks and right-sizing their product inventories. They are streamlining distribution cycles and delivering just in time. They are reducing packing and shipping errors. With each new RFID application deployed, companies are enjoying greater cost savings, more workforce efficiency, higher customer satisfaction and a stronger competitive posture.

All these successes have only served to whet industry's appetite for the benefits of RFID. So applications are evolving to deliver even more.

Industrial RFID applications are evolving to manage greater tag density, higher product volume, more RF-challenging environments and more product variety — all of which place greater demands on the performance of RFID readers.

🛜 Pallet-level tags   🛜 Case-level tags   🛜 Item-level tags
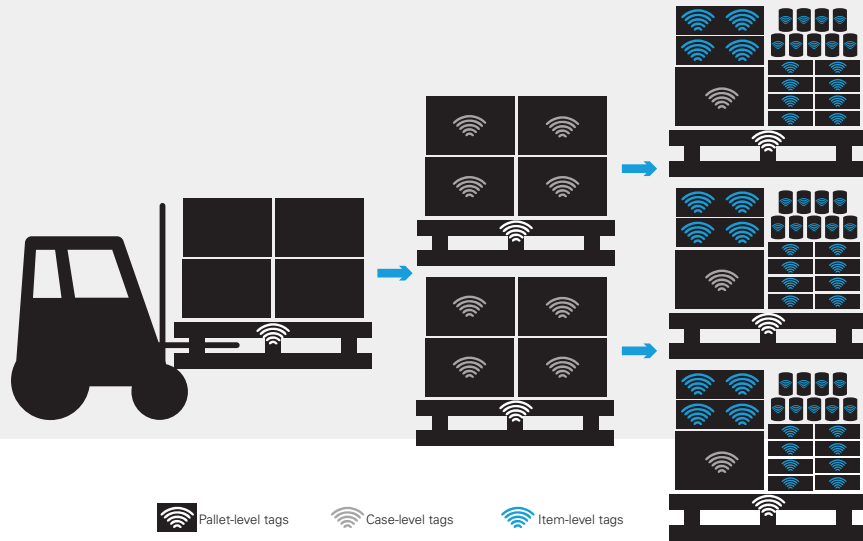
THE CHALLENGE:
EVOLVING INDUSTRIAL APPLICATIONS

Manufacturers, distributors, vendors and retailers are all eager to apply RFID solutions to their inventory and asset management challenges. Their needs are driving an evolution of RFID applications that can be summed up in a single word — more.

More Granularity

As more supply chain participants deploy RFID tags and readers to track the movement of product inventory, tag density has risen dramatically. Pallet or carton tagging is no longer sufficient for many; manufacturers are now source tagging which allows them to both serve retailer needs and reap the benefits of supply chain shipping efficiency. To keep up, much faster RFID readers are required to handle the greater density and volume of RFID tagged items.

More Challenging Environments and Products

RFID functions by transmitting and receiving radio frequency (RF) waves between tags and readers. However, not all environments or materials are friendly to RF communications. An overabundance of reflective surfaces like metals or stacking practices that might yield inefficient tag placement can both affect radio wave efficiency, causing interference and weak or distorted signals that are much harder to capture and interpret accurately. In addition, extreme heat or cold, dust and grease can wreak their own havoc on any kind of electronic equipment, including RFID readers.

Just as some environments are not RF-friendly, some products can also interfere with RF waves. Capturing data from an RFID tag positioned on a carton of metal buckets or bottled water, for instance, can be difficult enough.

Tagging at item level means multiplying that difficulty by full pallet quantities. Mix buckets and bottles on the same pallet and many current RFID solutions would be completely overwhelmed.

The proven value of RFID-based solutions has already encouraged deployment in most RF-friendly environments. Since the low-hanging fruit have already been harvested, industrial users are now looking for ways to bring the benefits of RFID to an increasing number of applications. To make that possible, RFID readers need to have a higher level of sensitivity, be more rugged and provide more configuration options that can be fine-tuned for the most challenging industrial situations.

More Products

Increasingly, supply chain participants are coming to the realization that, to gain more value from their RFID solutions, more items in the product line must be tagged. For those who handle a wide variety of products or whose stock changes frequently, as with fashion or seasonal items, tagging more and more product is a necessity and will require not only versatile tags and more sensitive reader configurations, but faster, more adaptive hosting processors, as well.

Higher RFID Reader Performance

To help expand RFID adoption into new industries and applications, RFID applications must efficiently meet all the demands for more granularity, in more environments and across more product lines. One of the key requirements for today's RFID solutions is a rugged, industrial-class fixed RFID reader that can meet the performance demands for tomorrow's applications.

THE SOLUTION –
A HIGHER PERFORMING RFID READER

Meet the challenges of advanced applications with an accurate, rugged high-performance RFID reader designed for industrial applications.

The Technical Demands
As more supply chain participants respond to the increasing retail demand for RFID-tagged products, efficient operations require high performance RFID readers that can meet the challenges.

Data processing must be fast enough to support high volume, high density and high throughput applications. Speed, accuracy and reliability are critical. Advanced RFID applications will also require industrial ruggedness, to operate with no down time in dusty warehouses and on fast conveyors and frigid docks. And as more products are tagged and more supply chain players rely on RFID to track and identify them, the technology will further be deployed in unfriendly environments and on unfriendly products; reliability in situations that might include reflective metal surfaces, liquids or other RF challenges is paramount.

As needs change – expanding the number or type of products tagged, for instance, or extending the system to cover more work areas – the right solution should be quickly and easily adapted, without disrupting either workfloor or back-office operations. That means the future-proof RFID reader can be easily integrated and have flexible options that can support both today's applications and tomorrow's.

MOTOROLA RESPONDS –
THE FX9500 FIXED RFID READER

Motorola now offers a rugged, industrial-class fixed RFID reader that sets a new high performance standard. The Motorola FX9500 is designed for the demanding and complex industrial RFID applications found in manufacturing, distribution/warehouse and retail receiving environments. Ideal for high volume, high density, high throughput applications, the FX9500 is fast and accurate with high RF sensitivity.

The FX9500 features an IP53 sealing rating and an extremely durable design, built to perform in the widely variable temperatures of a loading dock or in a large, dusty distribution center. The Motorola FX9500 not only features a best-in-class processor and expanded memory, it also

offers configuration options that let you tailor your RFID solution to your unique challenges. The FX9500 offers more antenna ports, with both 4-port or 8-port models available, so you can cover more dock door portals or read points with fewer readers for a lower cost per read point. The FX9500 also operates in either antenna-extending monostatic mode, using a single cable to both transmit and receive, or in high-performance bistatic mode, isolating transmission and reception on separate cables. These options give you more control to optimize your application for increased efficiency and accuracy every time your inventory is touched, from receiving to pick/pack/ship.

Ready to Evolve with You
Motorola's FX9500 Fixed RFID Reader is the latest addition to the largest and broadest UHF RFID portfolio in the industry. We are proud to be the only manufacturer that offers specific industrial- and business-class product lines, making it easy to choose an RFID solution that suits your immediate needs, your operational environment and your always-evolving plans for the future.

In UHF RFID deployments in virtually every industry and in every corner of the world, Motorola customers are today reaping the benefits of intelligent, forward-thinking RFID solutions, including:

- Near-100% shipping, receiving, and order accuracy
- 99.5% inventory accuracy
- 30% faster order processing
- 30% reduction in labor costs

Industrial RFID applications will continue to evolve, making ever greater demands on the performance of your RFID solution. We're ready to use our experience to help you get more value out of your RFID data and enjoy a faster return on your RFID solution.

For more information about Motorola RFID solutions for industrial applications, visit us at motorolasolutions.com/rfid or access our global directory at www.motorolasolutions.com/enterprisemobility/contactus.

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