

# Data Collection Times

## What is RFID Technology?

~ A technology overview provided by Quest Integrated Solutions, a division of Dowling Consulting Group

If you've ever responded to someone who uttered the acronym **RFID** by saying, "what's that?" then you're not alone. In fact, there is a fair share of individuals who have had this term explained to them, yet still cannot offer a reasonable summary to the next person they see. This article will provide you with the basics of the technology, its application, its potential paybacks and, of course, an explanation of the words behind the acronym.

While you shouldn't confuse RFID (Radio Frequency Identification) with barcodes, the two can be compared on a simple level. A barcode contains encoded alphanumeric characters in a machine-readable format. RFID also contains information in a machine-readable format. However, the similarities stop here.

The basic components of RFID technology are: the **tag** that contains encoded data; an **antenna** that is used to transmit RF signals to and from the tag; an RF **transceiver** that generates the RF signal; and a **reader** that passes the transmitted data to a host system for processing.

Tags, which are typically attached to assets such as pallets, vehicles, equipment, product containers, etc., take several form factors as shown in Figure 1. Each tag has a 1024-bit memory chip with read, write and rewrite capability. Compared to a barcode label, which cannot be modified once it is printed, the data on an RFID tag can be modified (rewritten) more than 100,000 times. Additionally, an RFID tag can be "scanned" through material such as plastic, paper, wood and glass. This means that, unlike scanning a barcode label, line-of-site is not required to scan an RFID tag. The tag simply needs to be within the radio frequency range of the antenna. This range can be as far away as 22 feet or as close as 1 inch.

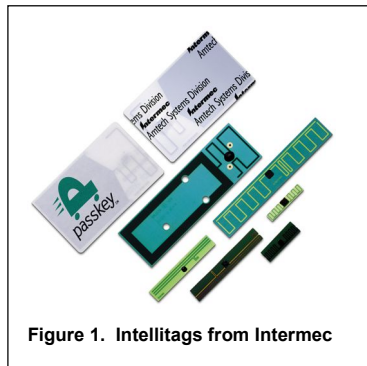


Figure 1. Intellitag tags from Intermec

The RFID antenna is usually fixed-mounted to a structure such as a conveyor, a passageway, or a dock door. It should be focused toward the area where tags need to be scanned. The reader/transceiver box is mounted near the antenna (within the length of the connecting cable), where it is wired to the host system.

Note that RFID hardware is also available in a more mobile form than noted thus far. For instance, RFID tags may be read (and written to) with some specific hand held data collection terminals that are configured accordingly. Intermec manufactures several handheld terminals that compliment their Intellitags. Additionally, Intermec offers a hybrid scanner that doubles as a standard laser scanner (for barcodes) as well as an RFID tag reader. See Figure 2.

Where can RFID be used? It is already employed at tollbooths, for example. Yeah, those drivers that pass through the booth at 65 MPH aren't experts at throwing coins into a basket. Instead, they have an RFID tag that provides instant acknowledgement to the antenna at the booth. Parking tags, ID badges, tractor-trailer tags, asset tags (even the ones in your local retail stores) are all examples of the RFID technology at work.

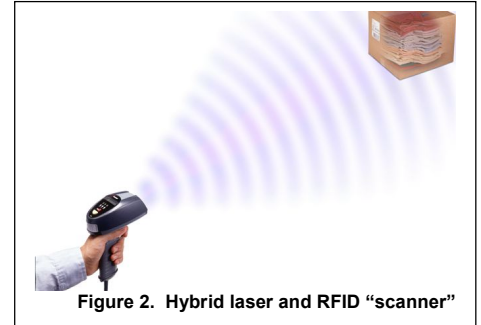


Figure 2. Hybrid laser and RFID "scanner"

The potential return on investment due to increased productivity, improved accuracy, and reduction in

overhead cost is realized everyday when RFID is employed. Imagine an automotive assembly plant that currently scans (barcodes) at 30 different intervals throughout the assembly line. This process could be entirely automated if an RFID tag was hanging from the rear-view mirror and antennas were placed at the 30 different "scan" points. The assembly line would actually move faster!

Also, picture a shipping dock where each palletized item must be scanned before entering the trailer. This process alone consumes considerable man-hours. Now, how much faster could a trailer be loaded if every pallet could be scanned (hands-free) the moment it passed through the dock door? Moreover, a trailer's entire contents can be written to an RFID tag that could be scanned as it leaves the facility...A truly amazing technology, and it's available now.

**ADVANCED NOTICE**

**Quest will be hosting an RFID Technology Seminar in Columbus, OH on January 26, 2001:**

- > Witness actual RFID products in use
- > Attend an informative technology discussion
- > Ask your questions directly to RFID specialists
- > Network with peers in your industry

To register in advance, receive more details, or to discuss an immediate RFID application, contact:

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