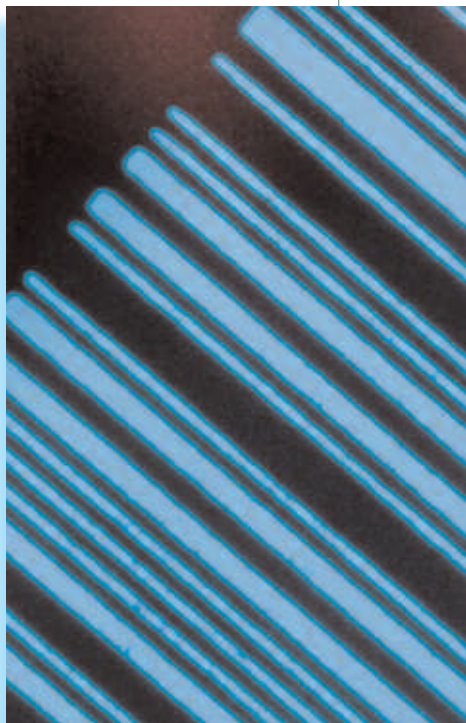


## Record tracking keeps you organized

### How can your company benefit?

Automatic identification and data collection (AIDC) refers to an array of technologies that help eliminate human data entry error and reduce time and labor. Bar code technology is one of several members of the AIDC family that also include magnetic striping, smart cards, RFID and wireless LANs. By employing AIDC technology and improved document management practices, organizations reap important benefits from improved control of their records.



Misplaced or lost files are perhaps the most significant of all costs associated with records management. Tracking allows an employee to locate any item quickly and precisely no matter where in the office it is located. The workflow process is streamlined and the information is readily accessible. The result is increased worker productivity and efficiency, allowing personnel to utilize their time in more effective ways.

Managers and executives can also increase their effectiveness with an improved document tracking system. With bar code or RFID technology, data is being captured in real-time. This enables decisions to be made based on concrete, current information. This can prove to be valuable in a situation where a document is needed, for

example, as evidence. The record location is accurate, up-to-date and readily available, thereby reducing a company's liability. And because tracking information is captured and stored in a uniform standard, human data entry errors have also been eliminated.

Customers and clients will also benefit when your company's records assets are well managed. With the ability to locate and manage records more efficiently, response time to a customer's needs is not delayed by having to search for needed files. Information can be presented quickly and accurately.

And what organization doesn't want to increase profitability? By having ready-access to information and streamlining workflow processes, companies can reduce the cost of doing business and increase profitability. Tracking systems provide organizations with control of their information assets and give all those involved peace of mind! ■

#### TOP 10 BENEFITS OF TRACKING

1. Eliminate misplaced files
2. Increased productivity & efficiency
3. Increased customer service
4. Improved workflow processes
5. Reduced liability
6. Increased manager effectiveness
7. Improved records management
8. Increased profitability
9. Accurate & uniform data collection
10. Peace of mind



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# Bar code technology - fast, easy & accurate

Bar code tracking systems can provide organizations with a fast, easy and accurate method of automatic data collection and tracking, and have been widely used within countless industries. Bar code labels can be attached to any item ranging from individual records, files, record boxes and multi media to a whole host of other items. The label acts as an identifier that can be scanned each time the document is removed from or returned to a shelf or file room. While the most visible application of this technology is within the supermarket industry, bar code tracking has become widely used for document management purposes within many businesses and industries.

Experts estimate that each document that can't be located costs businesses between \$60 and \$200. This figure is based on time spent looking for lost or misplaced documents in addition to the lost revenues and opportunities that result from not having the information located in those documents.

Bar code technology eliminates data entry errors, speeds the collection and transmission of data and makes the entire data entry/collection process more efficient. Entering bar code data is at least 100 times faster and more accurate than traditional, manual keyboard entry. This dramatic increase in efficiency can be translated into increased productivity for any operation or organization. In addition, bar code tracking provides real-time information. Managers can base decisions on current, concrete and accurate information.

## Components of a bar code system

There are four basic components that comprise a bar code system: a bar code label, a scanner, a decoder and a host connection.

### Bar code labels

A bar code symbol consists of a series of parallel bars and spaces and has actual data coded into the symbol. Bar code

labels can be pre-printed offsite or printed onsite from any laser or ink jet printer, though with varied results. Thermal laser printers, however, were specifically designed to print high-quality text and graphics and can be used to print one label at a time or an entire roll of labels. Regardless of the physical printer being used, a bar code True Type font must be installed. These inexpensive fonts are easy to install and when displayed or printed, bar code patterns corresponding to the characters appear.

### Scanners

The second basic component of a bar code system is the scanner, also known as the input device or reader. There are a variety of input devices, each with its own strengths and limitations, whose function is to read the bar code label via an electronic signal.

The simplest and least expensive input device is the wand. It is human-powered and must be held at the proper angle and moved at the proper speed in order for the bar code to be read.

The CCD or "Charge Couple Device" is another type of input device. While a CCD can read bar codes quickly and easily, it has a short read range - held no more than 1 to 3 inches from the bar code. Another limitation is that a CCD has a limited width and will not read bar codes that are wider than the face of the input device.

The third and perhaps most popular input device is the laser scanner. There is no read range limitation with this type of device as it comes in three ranges: a standard range laser scanner can read a bar code from 6 to 24 inches away, a long range scanner has the capability to read bar codes from 2 to 8 feet away, and an extra long range laser scanner can read a bar code 30 feet from the device. With varied read range comes a range in price as well - anywhere from \$200 to \$2000 per device.

*continued on page 3*

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### Decoders

Decoders are located inside the bar code readers or as an external device and serve three functions:

- to automatically discriminate between various bar code types or symbologies
- to decode the electronic signal that was read back into information
- to translate the information into data for the host

Decoders located inside readers are less expensive, though also less functional. External decoders have the capability to manipulate data and accommodate multiple input devices.

### Host connection

Bar codes are used to input data into a host computer system. In order for this data transfer to take place, a host connection is needed between the computer

and bar code equipment in order for the bar code to be decoded and input to a PC as data. The most common method for host connectivity is a keyboard "wedge."



Like its name, the decoder is "wedged" between the PC, or terminal, and its keyboard, allowing users to input bar code data without changing existing applications.

Whether it's managing volumes of records or mass quantities of products or materials, bar code technology is a popular method of automated identification and data collection. The only limitation of this system is that the item must be in line-of-sight with the reader. Depending on the application it's being used for, this limitation may in fact not be an issue at all. ■

## SYSTEC solutions: tracking & managing your documents

The days of solely tracking paper documents are over. Today, most organizations need to manage an array of media in addition to hard copy, including e-mail, e-documents, images, microfilm and faxes. Systec's network of professionals can assist your organization in implementing a document tracking system that will seamlessly manage all forms of your record assets. It will give your organization the ability to track and identify the location of hard files, manage electronic files, organize document history and audit trails, establish automated retention capability and more.

SYSTEC has the technology products and filing supplies to develop a complete tracking solution. Our highly skilled team of professionals will analyze your business' workflow processes to determine your needs for proper and effective management of all your record assets. By streamlining workflow and providing ready-access to information, your organization can reduce the cost of doing business, increase profitability and improve customer service - taking your business to the next level.

For more information on how SYSTEC can help you better manage your information assets, contact us at 1-877-7SYSTEC or e-mail us at [info@systecgroup.com](mailto:info@systecgroup.com).



# RFID technology for high volume tracking

Radio Frequency Identification (RFID) is another member of the automatic identification technology family. This wireless system, which has been gaining momentum in recent years, has the ability to track moving objects, allowing for non-contact reading anywhere and at anytime. RFID technology has been in use for quite awhile. For example, the anti-theft plastic tags attached to merchandise in stores is RFID technology, as well as the automated toll booths that monitor cars passing through so proper billing can be done. RFID is starting to become more widely used in records applications, and often replaces bar code technology.



3M™ offers an array of RFID solutions. The Tracking Pad reads and identifies multiple folders and can be placed at key workflow locations to track the movement of files. Because of the non-line-of-sight capability, the Tracking Tag can be placed on the inside or outside of the folder.

The overall advantage of RFID systems is their non-contact, non-line-of-sight nature. Tags can be read quickly and through many visually or environmentally challenging conditions.

Within records management, RFID technology is ideal for environments where the volume of transactions is high, files move through many steps or between many people outside the file room, and where security restrictions are vital.

The overall advantage of all types of RFID systems is their non-contact, non-line-of-sight nature. Tags can be read quickly and through many visually and environmentally challenging conditions. Bar codes or other optically read technologies do not have this capability.

For records management purposes, RFID technology allows file folders to be checked in or out very quickly without having to scan the file one at a time. One of the most convenient applications is to have the reader located in the door frame. This eliminates the need for a records manager to scan each individual record. With RFID, many folders stacked together can be read all at once. The same process applies to reading folders and then boxing them for file relocations.

## Components of an RFID system

An RF tag that is attached to the item that needs to be tracked, an antenna or coil and a transceiver with a decoder are all required for an RFID system.

## RF tags

RF (radio frequency) tags contain unique, digital identification codes. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal and broadcasts its identification code. The reader picks up the code, decodes it and passes it to the host computer for processing. The identification code relates to a database entry containing all the information about that particular item.

RF tags come in a variety of shapes and sizes. They can be as small as a pencil lead in diameter and one-half inch in length for use as in animal ID tags, which are inserted beneath the skin, or credit card shaped for use in access applications. RFID tags are categorized as active or passive. (See chart on page 5.)

## Antennas

The antenna emits radio signals to activate the tag and read or write data to it. It acts as the conduit between the transceiver and RFID tag. Antennas come in a variety of shapes and sizes. For example, by building the antenna into a door frame it can receive tag data from anything passing through the door.

## Features of active and passive RFID tags

|                                 | ACTIVE RFID TAGS   | PASSIVE RFID TAGS  |
|---------------------------------|--|--|
| Use of non-records applications | Automated toll collection, railroad car tracking, tracking parts through manufacturing | Security access, airline baggage, animal identification, asset tracking, libraries               |
| Power source                    | Powered by an internal battery   | Operate by a separate external power source and obtain operating power generated from the reader |
| Read/write capability           | Typically read/write   | Typically read-only  |
| Read range                      | Higher frequency and longer read range because of the battery-supplied power           | Lower frequency, shorter read range, requires a high-powered reader                              |
| Size & cost                     | Greater size, greater cost   | Lighter than active tags, less costly  |
| Operational life span           | Limited operational life   | Virtually unlimited operational life   |

### Transceivers

The transceiver controls the system's data acquisition and communication. Often times the antenna is packaged with the transceiver and decoder to become a reader, also known as an interrogator. A reader is required to process information on the RFID tag. These devices can be configured either as hand-held objects or a fixed-mount device and are available in a variety of shapes and sizes.

RFID tags can also be read at remarkable speeds - in most cases responding in less than 100 milliseconds. Again, this is not possible with other technologies.

For example, by using a portable RFID wand, hundreds of file folders can be scanned per minute resulting in complete file room inventories being accomplished in a matter of minutes.

Developments in RFID technology continue to grow, yielding high memory capacities, wider read ranges and faster processing. For a wide range of automated data collection and identification applications, RFID has become an indispensable technology. Though RFID is costlier compared with bar code technology, experts predict RFID will continue to grow in its established niches. ■

### REAL LIFE STORY

There was a company that just implemented RFID, without the full support of some of the managers. At one time, a manager was not able to locate a needed file. He called the central file room and demanded that the file be brought to him at once. The system indicated that the needed file was indeed already in that manager's office. The records manager took a portable scanner to the manager's office, scanned the bookshelf and within seconds heard the beeping scanner, indicating the missing file was found. "I guess we made a wise investment," commented the manager.

# Matrix comparison of bar code and RFID technologies

|                      | BAR CODE TECHNOLOGY   | RFID TECHNOLOGY  |
|----------------------|---|--|
| Applications         | Lower volume of records, manually read where time is not critical, more precise.                              | Higher volume of records, automatically read, faster, eliminates need for file room attendant.   |
| Functionality        | Bar code technology uses optical signals to transfer information from the bar code label to the reader.       | RFID technology uses radio frequency signals to transfer information from the RFID tag to the reader.  |
| Optical nature       | Requires that the bar code be "seen" by the bar code-scanning device. This is referred to as "line-of-sight." | Does not require that the RFID tag be "seen" by the scanner - RFID is a non-contact, non-line-of-sight technology.   |
| Read limitations     | Some read limitations - if bar code is creased, smeared or faded it may not be read.                          | RFID tags can be read in visually and environmentally challenging conditions.  |
| Information          | Bar codes are read-only and the information imprinted on a bar code cannot be changed.                        | Active RFID tags have read/write capability - they have electronic memory similar to a computer or digital camera to store information. This information can be dynamically updated. |
| Read range           | Reads 1 file at a time  | Can read up to 30 files/sec.   |
| Real-time            | Information is as current as date/time the item was scanned.  | Can track items, equipment, files and other materials in real-time.  |
| Cost of bar code/tag | Bar code labels are inexpensive to print.   | The average retail price of a passive RFID tag is \$1.25/tag.  |

There are pros and cons to bar code and RFID technology. In some applications the low cost and precision of bar code data collection is necessary, where there are lower volumes of records that can be scanned manually. There are other times when the automatic recording of movement is better suited to the job.

But the fact remains, having an effective tracking system in place proves to be a valuable asset to any organization that deals with high volume records or material management. Each of these systems should be examined closely to determine which would best fit your organization's needs. ■



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