

3M

3M, a leader supplier of electromagnetic (EM) theft detection systems, has been offering RFID since 2000, but its RFID is different from the rest of the industry because it combines the two technologies.

3M's system relies on EM for security and on RFID for tracking. A book or other item would have both a Tattle-Tape™ security strip and an RFID tag. The exit sensors read only the security strip. 3M calls this unique combination the 3M Materials Flow Management Solution.

3M claims EM technology offers better security. It also says that combining the two technologies into a program makes possible gradual migrations to RFID and adds affordability because the existing barcodes can continue to be used.

Competitors, though, claim 3M is just trying to protect its huge installed base of EM systems and that the hybrid approach increases both the cost of the supplies and the labor. 3M argues that combining the two technologies makes possible the use of low-cost security strips on items in which a library might not wish to invest the cost of an RFID tag. Loose issues of magazines and paperbacks are examples of such items.

Despite the claims and counterclaims, 3M said in fall 2003 that it will launch a new RFID product for libraries in 2004 that will use a single RFID tag for all security and materials handling functions, including media. The company plans to price it competitively.

3M provides a broad range of services. At no additional cost, conversion specialists visit a library and design a custom plan that includes equipment leasing, 3M RFID tags, EM security strips, and training of library personnel. At additional cost, 3M will provide staff for applying tags, inventorying, and weeding.

Tags

3M produces its own RFID tags using a Texas Instruments chip. The chips are 2.0-inch square read-write tags with 256 bits of memory to accommodate an identification number, a library location, and other brief information. The tag's role is strictly tracking as the security function is handled by the electromagnetic strips. A cover label is incorporated as a standard part of the 3M tag and is unique to 3M.

Conversion station

3M has developed a mobile conversion station on wheels so librarians can work in the stacks to scan the barcodes on books using a laser scanner and create RFID tags with the same identification numbers as are on the barcodes. Librarians who have had to bring books from the stacks to a conversion station have expressed the desire that their RFID vendors offer such a conversion station as an option.

A touch-sensitive screen facilitates configuration and operation. The conversion station also can be used to include information in addition to the identification number and to rewrite information.

No connection to an automated library system is required as tags can be programmed from either existing barcodes or from a file. The one-step programming process involves merely touching the tag to the conversion station desktop and then placing the tag on the item.

The vendor recommends that the RFID tags be placed inside the back cover of each item. Its system is set up to prompt the operator to place tags in one of three positions to minimize the chance of two tags canceling out each other when they are stacked.



Conversion Station.

Staff workstation

3M combines security and tracking in its two staff workstations. The Tattle-Tape security strip and the RFID tag are read at the same time, deactivating the former and updating the automated library system's database with information from the latter.

Magnetic media such as audiocassettes and videotapes, though, require a two-step charge. First, the media type information stored in the digital identification tag has to be examined to separate the magnetic media that might be damaged by the electromagnetic security operation. These media are discharged, but not desensitized on the staff workstation, and then desensitized on a separate media-safe desensitizer.

3M's Model 795 workstation can be mounted either flush in a counter or on a top. It interfaces with the automated library system client using a wedge, a reader that can read any barcode. Model 795 can be configured to run many clients, thus eliminating the need for an additional computer on the staff desk. It also can be used as a conversion station. The unit has most of the same components as the mobile conversion station.



Model 795 Staff Workstation.

The Model 795 does not support multiple item check-out.

Patron self-charging stations

3M has two series of patron self-charging stations. The Model 6210 station was originally designed to read barcodes, but it can now be upgraded to read RFID tags. It also handles the desensitizing of the Tattle-Tape strip.

Model 6210 (pictured on the next page) interfaces with almost all automated library systems. 3M developed the SIP2 protocol that is now the standard for interfacing self-charging stations with automated library systems.

Strips are sensitized or desensitized, as compared with tags, which are charged and discharged.

ATM: Automated Teller Machine



Model 6210 Patron Self-Charging Station.

feedback from librarians that single-item processing by patrons ends up requiring less library staff intervention because patrons are likely to be confused if one or more items in a stack are not read.

3M's Model 7210 and Model 7210 SE patron self-charging stations read both barcodes and RFID tags. Model 7210 SE allows patrons to check in as well as check out material. When in the check in mode, the unit resensitizes the Tattle-Tape strip.

Model 7210SE offers two languages, with the option of having up to four languages from a total selection of 35 languages, as well as a users-selectable check-in/check-out or staff-selectable check-in/check-out. Because electromagnetic security strips are used, the unit has to be configured with a video check unit.

Model 7210SE does not support multiple item self-charging. The vendor received

Exit sensors

3M offers no RFID exit sensors. 3M customers use the company's EM Model 2300, Model 3500, or Model 3800 electromagnetic detection units at exits. The units are activated by 3M Tattle-Tape security strips that have not been desensitized. 3M's position is that EM strips can be concealed in the spine or gutter of a book, making them less likely to be seen and removed.

Patron self-discharging station

Yet another device, the 3M Smart Check, is a dedicated self-discharging station that looks like an ATM. It has a touch screen and delivers a receipt when the check-in and resensitizing of the Tattle-Tape strips has been completed.

Sorter

Smart Check can be used with the 3M Smart Sorter, a mechanical system that sorts returned items into multiple bins. The first time staff touches materials checked in by patrons is at time of reshelving. A docket printer may be used to print exception slips for books on hold. An extended interface protocol is required to link the sorter to the automated library system.

Portable scanner

3M's portable scanner, the Digital Library Assistant (Model 702), has a large storage capacity so information for more than a million items can

be downloaded into it from the automated library system. The device can then be used to scan the shelves for inventorying and shelf-reading.

The unit weighs just 24.5 ounces—it's the lightest weight in the industry. The scanning speed of three to four items per second is significantly slower than the 20 items per second claimed by the vendors of other RFID systems, but more is being done. The unit simultaneously inventories, looks for books that are incorrectly shelved, indicates on its screen between which books the book should be shelved, and looks for books that have been requested by patrons.

Additionally, the unit can be used to pull holds from the shelves, to find an item that has been requested by a patron, and to collect use data in reference or another noncirculating collection. It can perform all these tasks simultaneously.



Portable Scanner.

Costs

Most of the 3M equipment costs somewhat more than that of other vendors, but 3M does not use a server, which offsets the higher cost of the other components.

More significant than the equipment cost is the fact that the combined cost of the Tattle-Tapes security strips and RFID tags is moderately greater than the cost of the RFID tags alone.

Both the Tattle-Tape and RFID tag must be inserted into or applied to the material, which increases labor costs. In a competitive bidding situation, however, 3M prices may be extremely competitive.

Customers

U.S. installations include the Joe Barnhart Bee County Library (Texas), Maricopa County Library District (Ariz.), Chandler Public Library (Ariz.), Farmington Public Library (N.M.), University of Colorado Library, and the University of Nevada/Las Vegas.

3M also has donated a system and tags worth \$350,000 to the University of Michigan Libraries. 3M customer sites outside the United States include the National University of Singapore, Hoogezand University of Padova (Italy), Glasgow University (U.K.), and Cambridge University (U.K.).