

**The Research Laboratory of Electronics is using an EPC Gen 2 RFID system from Barcoding Inc. to manage thousands of funding proposals and other paper documents.**

By Beth Bacheldor

Mar. 16, 2009—The [Research Laboratory of Electronics](#) (RLE) at the [Massachusetts Institute of Technology](#) (MIT) is employing EPC Gen 2 passive RFID tags to keep tabs on thousands of documents. The system includes [Barcoding Inc.](#)'s RFID interrogator, known as the CaptureTech RFID Interpreter, as well as custom software that the company designed specifically for MIT.

The RLE, one of MIT's interdepartmental academic research centers, focuses on electronics, starting at the most basic physical realm of particles and quantum physics, and extending to complex engineering applications.

Prior to implementing the RFID-enabled file-management system, the RLE stored personnel files—pertaining to faculty members, as well as MIT graduate and undergraduate students working at the research lab—in cabinets located in the head of personnel's office. Proposal applications for all research projects submitted for funding were stored in cabinets kept within a separate office. Employees at the RLE relied on the manual honor system, simply pulling documents from cabinets as needed, then returning them at a later time.

"We had absolutely no system in place," says Krista Van Guilder, the RLE's manager of media and design. "Files were lost on occasion—or often just sitting on someone's desk, under papers—and it was very difficult to find files regularly. If someone went to pull a file, and it wasn't where it was supposed to be, they would have to walk around the offices and ask for it."

Now, RFID tags are being attached to the inside of each folder used to store a document, and all folders have been moved to shelving units housed in a central office. Staff members can visit the office, pull a document's tagged folder from a shelf, walk to a wall-mounted touch-screen computer and wave the folder past the CaptureTech RFID Interpreter attached to the computer. The reader captures the tag's unique ID number, and the worker simultaneously views a list of names on the computer, then touches his or her name to check out that document. Later, to check it back in, the same procedure is followed.

The CaptureTech RFID Interpreter, unveiled in July 2008, is an RFID interrogator that can be used with a Windows-based PC without the need for any additional software, or software changes (see [Barcoding Inc. Intros Plug-and-Play RFID Reader](#)). The interrogator plugs into a PC's USB port and leverages Barcoding's CaptureTech RFID Wedge, which automatically converts tag data into a format that PC-based software—including Word, Excel and other [Microsoft](#) Office applications—can comprehend.

The custom Web-based software developed by Barcoding runs on a nearby computer and keeps track of which documents have been checked out, and by whom. If an employee is unable to locate a particular document in the filing office, he or she can go to the computer, look up the name of the

person associated with that particular document, and determine who has checked it out. Workers can also look up a file's status via the Web interface from the desktops in their offices. If the document is in a particular worker's office and that person does not recall its location, a [Motorola MC9090-G](#) handheld RFID reader can be utilized to find it. That same handheld can also be used to scan the shelves in case a document has been misfiled.

The reader leverages Motorola's so-called Geiger counter feature. Users input the tag ID numbers of any folders they are searching for, then move around the room. The device will begin beeping when it reads inputted tag ID numbers. "The MC9090-G will alert the users when they are close to the file," explains Jon Stroz, Barcoding's marketing manager. While the reader can't pinpoint a document's exact location, he explains, "it will give the user a very small window to look in," by alerting that individual that the document's folder is on a desk or on a particular shelf, thus eliminating the need to search an entire shelving unit or office.

The custom software also provides reports summarizing which documents are checked in and out, says Jack Nosek, a Barcoding software developer. In addition, the software is used to initially input documents into the system, and to correlate those records with the tags' unique ID numbers.

An administrative assistant has been transferring the files into new folders and affixing tags to them. To enter them into the system, the assistant selects the document type (personnel or proposal) from the list in the software, and fills out the fields required by the database. He or she then utilizes a handheld bar-code reader to scan a bar-coded ID number also on the tag (identical to the RFID tag's ID number) in order to associate the tag number with the document.

At times, Stroz says, bar-code technologies make more sense for organizations than radio frequency identification, because RFID is more intricate. That, he notes, was his firm's initial impression when it first met with the research lab. "Sometimes, we suggest to customers to look at bar-coding if they can get similar results, and we presented [to the RLE] a solution that involves bar-coding," he states. "But they said it took too long to scan the files in and out, so we presented the RFID solution."

Van Guilder reiterates Stroz's point. "We wanted to make this as painless and quick for people as possible," she says. "With the RFID system, all people have to do is walk by the system, wave the file in front of the reader, and touch their name on a screen. With bar-coding, they'd have to open up the file, pick up a scanner and scan it. And often people check out several files, so that could take a lot of time. While it might have only added 15 seconds, people might just decide to skip using the bar-code scanner and walk out with the files. Obviously, if people don't use the system, the system is useless."

The RLE began working with Barcoding in December 2008 to plan and implement the RFID system. The system has been up and running since February of this year. Approximately 2,000 files have been tagged to date, with 5,000 or more expected to be tagged in total.