

# RFID Tags for Monitoring Shelf Life

A startup is testing RFID time temperature integrators that monitor the status of perishables in real time.

May 19, 2003 - It's been widely recognized for several years that time temperature indicators or integrators (TTIs) can improve the quality and freshness of perishable products. But TTIs haven't been widely adopted. A startup called Infratab hopes to change that by integrating TTIs with RFID tags.

"Our tags will have the same tracking capabilities as RFID systems but with additional capabilities of TTI," says Therese Myers, CEO at Oxnard Calif.-based Infratab.

Infratab is set to begin its first technology trials with multinational companies this month. The "alpha" trials – with a brewer, a pharmaceutical company and a grocer - are expected to last four to six months. Infratab expects its first products to be ready shortly after that.

Most existing temperature sensors provide a visual indication that a temperature threshold has been reached. If 3M's MonitorMark, for instance, is exposed to temperatures above a certain threshold, a blue color appears on the label and spreads across a spectrum of windows. The color change is permanent, so the label provides a record of temperature exposure.

Infratab's tags are electronic. They consist of chip that senses temperature and integrates it over time to determine the shelf life of a product. That information can be communicated via RFID. The tags also have a battery and an optional visual display that provides green, yellow and red indicators of the status of the item. So if a temperature-sensitive product was left sitting on a warehouse dock on a sunny day, the label would recalculate the shelf-life and would show red, warning workers that the product is no longer safe to sell.

The technology is cheaper than traditional data loggers, which store temperature information on a microchip, and it promises to be far more accurate than traditional "sell by/use by" dates. That means there's less chance of spoiled or poorly stored goods reaching the consumer. Infratab expects to sell its TTI labels to companies that need to monitor, in real time, the shelf life of perishable products such as food, pharmaceuticals, chemicals or explosives.

Infratab maintains that its tags will be well suited to supply chain management because it combines real-time monitoring of shelf life and RFID tracking. "Some of our tests are planned for the supply chain," says Myers. "Others will be done on bulk products for reporting the product integrity to a buyer."

The TTI label requires a battery, so its price depends heavily on the size of the battery. If the shelf life of the product is several years, then a larger, more expensive battery is needed. The tags will likely cost around \$1 for many products.

Myers believes that many companies that transport goods in reusable plastic containers, beer kegs and other containers will find the price acceptable. "The common denominator of our early adopters is that they all are focused on product quality," she says.

Infratab says it has not decided whether it will develop its own RFID chip or license a design from existing vendors. "Our first RFID tag is ISO 15693 compatible, but we have been closely following the MIT Auto-ID Center with an eye to using its Class 3 and Class 4 Electronic Product Codes tags," Myers says.

But she is concerned that existing Class 0 and Class 1 EPC standards do not cover the kinds of data that Infratab's TTI integrated chips would need to deliver, and the company is hesitant about proceeding ahead of the establishment of widely accepted standards. She hopes that eventually the Auto-ID Center's EPC technology will work with standards being established by the International Organization for Standardization.

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