

# Putting Tags on Test Tubes

Maxell is winding up development of an RFID system, aimed at the life sciences sector, that will read and write to a trayful of tagged test tubes.

By Jonathan Collins

Apr. 29, 2004—Maxell Corp. of America is preparing a new RFID application for the life sciences industry. The company says it is finishing up work on a way to affix its Coil-on-Chip tags to the base of plastic test tubes, as well as an RFID reader that will read and write to a trayful of the tagged vials. The company believes there will be a significant market for its system for use in such things as medical diagnostics and pharmaceutical trials.

“Using RFID in life sciences is about saving peoples lives,” says Rumi Kitatate, marketing manager for new product development at Maxell Corp. of America, which is based in Fair Lawn, N.J. The company is a subsidiary of Tokyo's Hitachi Maxell, which produces optical and magnetic data storage media such as CDs, audiotapes, videocassettes, as well as batteries.

One specific application that the company is looking at is using RFID to accurately identify bags of blood used for transfusions, although exactly how Maxell's tags and readers might be used to do this has yet to be determined. Currently, the health care system uses bar-coded labels to identify blood.

“The present bar code system is obviously not working properly. Around 100,000 deaths occur in the U.S. each year from blood transfusion mistakes,” says Kitatate. With bar codes, Kitatate explains, “accurate reads are dependent on the visibility of the tags. That means they are not 100%. RFID does not have these problems. The [health care] industry needs to invent a totally new system that includes RFID to help prevent mistakes.”

Maxell's Coil-on-Chip tags operate at 13.56 MHz, using a proprietary protocol developed by Maxell. Each tag consists of an antenna mounted directly onto the surface of a 2.5mm-square read-write silicon chip. This small size is a key prerequisite to embedding the tags to the bottom of a test tube, which can be as small as 3mm in diameter. Depending on the model, Maxell tags can store 128 bytes to 4 kilobytes of data in order to record such things as a test tube's location history, contents and any work carried out on the contents.

Since the tag has a read-write range of just 1mm to 3mm, Maxell's new system is designed so that a tray of test tubes can be placed on top of the reader, keeping the distance between the reader and tags within acceptable limits. The readers will be available in several versions that differ according to the number of tagged vials, from 64 to 96, that will be stored and read on each tray.

Maxell says it is still developing its RFID test tube system, but it hopes to ship its first samples in the summer to customers that have already approached the company looking for RFID test tube solutions.

Although pricing has yet to be determined, the company maintains that its offering will be competitive with bar code pricing despite the lower cost of barcode labels compared with the RFID tags. "Our readers will less than half the price of a 2D barcode reader, but there will be a premium for the tags over bar code labels," says Kitatate.

Maxell's test tube system will not be the first life-science application to use the company's RFID tags. For the past two years, its Coil-on-Chip tags have been used by Alexeter Technologies, a developer and provider of devices that can test for the presence of anthrax, ricin and other biological hazards. Embedded within 5-cm-long plastic cartridges used to hold samples of unidentified substances, the tags carry a unique identification number for the test cartridge itself and can store data regarding the substance contained within the cartridge.

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