Matrics To Sell New EPC Tag

The startup plans to market a low-cost UHF chip based on an Auto-ID Center specification.

Dec. 4, 2002 - Matrics, a startup in Columbus, Md., revealed that it is producing a low-cost UHF chip based on the Auto-ID Center specification known as Class 0. The company is also working with KSW Microtec and Mühlbaeur of Germany on a high-speed, low-cost machine for attaching antennas to microchips.

The Class 0 tag has a write once read many times (WORM) chip. The data is written to the chip during the fabrication of the silicon wafer. The Auto-ID Center's Class 1 specification is for a chip with electrically erasable programmable read-only memory (EEPROM). That is, the chip can be reprogrammed, but not written to with an ordinary reader/encoder.

Matrics entered the market a little more than a year ago with a microchip that was just 1000 microns by 900 microns. The new chip will be even smaller – less than 600 by 600 microns. The design has been done, and the first chips will be delivered early next year. Matrics will be able to deliver the tags in large quantities by the middle of the year, CEO Piyush Sodha told RFID Journal.

Matrics has also been working with KSW and Mühlbaeur, which makes machines for assembly chips and antennas into tags, to create a machine that will be able to handle smaller and smaller chips, assemble them more quickly and at lower cost than current machines.

"We felt early on that as this industry scales, breakthroughs like [Alien Technology's] fluidic self-assembly and others are important," says Sodha. "However, there needed to be a bridge solution to drive the cost down even at lower volumes and using reasonably mature technology. We set out, with Mühlbaeur and KSW, to provide a solution that would potentially be a five to 10 times improvement on existing technology.

The team evaluated existing flip-chip machinery, which is used to attach the antenna to the tag, and tried to resolve some of the limitations involved with assembling very small chips at very high speeds. Sodha says that they have achieved a breakthrough that could reduce the cost of attaching the antenna to just a penny, from 5 to 6 cents today.

"Some breakthroughs we've had in the technology give us comfort that we can prototype such a machine in the first quarter of next year," he says.

He declined to describe the breakthroughs, saying he would prefer to wait until the prototype is available. The goal is to create a device that initially can assemble at least 30,000 RFID tags per hour. Currently, most machines can produce about 7,000 to 8,000 units per hour. The three companies hope the second generation machine, expected to be available in two years, will assemble 50,000 tags per hour at a fraction of a cent.

"We're not trying to revolutionize the assembly of inlays, like Alien," says KSW's Eitan Avni. "It is based on existing know-how and some new R&D. I can't divulge the changes in the design, but it will not be a conventional flip-chip machine that you see today."

The first beta test machines will be available next year. They are not only for attaching antennas to Matrics chips. The partners say that the machines will be designed to assemble tags with any microchip the customer wants to use.