

The inlay manufacturer hired two new engineering execs to build strengths in RFID testing and application development.

By Beth Bacheldor

June 20, 2008—[Avery Dennison](#) is well-known for its office products and innovation in self-adhesives and label materials. Founded in 1935, the Pasadena, Calif.-based company reported sales of \$6.3 billion in 2007. And for more than four years, the firm has been actively building its RFID organization. In January of this year, Avery Dennison's CEO, Dean Scarborough, said the company expected \$50 million in sales from its RFID products in 2008. Although that represents a small percentage of the company's overall revenue, executives claim it is one of Avery Dennison's fastest-growing businesses.

The [Avery Dennison RFID](#) division was formed in 2004 with a lineup of ultrahigh-frequency (UHF) RFID inlays to primarily address the carton-and-pallet market created by [Wal-Mart](#). The division's product portfolio currently contains more than a dozen RFID products, complying with the EPC Gen 2 and ISO ISO/IEC 18000-6C standards for passive UHF tags, used worldwide in a broad range of applications. These include internal and external supply chain environments, the pharmaceutical, aviation and retail apparel sectors, and in item-level applications.



Robert Cornick

The RFID division offers a selection of products for asset-tracking applications, particularly for returnable packaging, as well as other challenging materials and environments. The company also offers RFID products through its [Avery Dennison Retail Information Services \(RIS\)](#) division, which sells RFID printer-encoders—most complying with the EPC Gen 2 and ISO ISO/IEC 18000-6C standards—and focuses on developing complete solutions for the retail sector. The RIS division played a vital role in the development and rollout of European retailer [Marks & Spencer's](#) RFID program, and also provides data-warehousing and brand-authentication programs to several apparel manufacturers.

Avery Dennison RFID has its own dedicated research-and-development organization with its own staff, distinct from the rest of Avery Dennison's other groups. Last month, the firm hired two executives to work at its Atlanta Technical Center (ATC) in Georgia. Harry Watkins has joined as VP of engineering, responsible for the creation of new products and processes for U.S. and international emerging markets. Prior to joining Avery Dennison RFID, Watkins served as senior director of [Sensormatic](#), a division of [Tyco](#) specializing in electronic article surveillance (EAS) systems and RFID.

In addition, Ken Tinnell has joined the company as senior director of applications, leading the ATC's applications team. He previously served as director of technology at [Terso Solutions](#), a manufacturer of RFID cabinets, freezers and refrigerators. Both executives have engineering degrees: Watkins holds a

bachelor of science degree in electrical engineering from the [University of Florida](#); Tinnell holds a master of business administration degree and a master of science degree in industrial engineering from the [University of Cincinnati](#), as well as a bachelor of science degree in electrical engineering from the [University of Kentucky](#).

"[Our] R&D team has been expanding its capabilities since its inception in 2003," says Robert Cornick, Avery Dennison RFID's VP and general manager. In order to quickly develop tag designs for pilot programs, for instance, the division has invested in equipment and processes enabling the company to proceed from an antenna design on a computer to a physical working tag in as little as 20 minutes.

"This is increasingly important as the number of chip choices expands, and as customers develop more sophisticated applications," Cornick says. "We can develop and present a handful of options very quickly, instead of relying on a one-tag-fits-all approach." The division also continues to review, evolve and redirect resources for its R&D team, to ensure it has the proper balance of expertise, research and skills.

"For example," Cornick explains, "when reader technology is stable, we direct resources toward chip research. When the chip choices are stable and new readers hit the market, we make it our business to understand the set of new readers—such as how they interact with chips and tags—better than the individual reader companies do. We always have a significant portion of our engineering resources focused on developing and refining applications for customers."

The company's R&D organization is composed of three main units: The ATC team focuses on applications—that is, the use of RFID in a specific instance to solve a particular business need—and testing; a team in the United Kingdom concentrates on antenna design, tags and interrogators; and a group in Avery Dennison's production facility in Clinton, S.C., develops and supports the company's own manufacturing processes, along with those of the label converters with which it works. The company declines to disclose budgets or staff size, but Cornick says the largest engineering team is the one in Atlanta.

Avery Dennison's clients can leverage the ATC to analyze their RFID applications and determine the best tags and other equipment for the job. What's more, the center helps customers quantify and articulate the issues and tradeoffs involved in an RFID application so they can make informed choices. According to Cornick, the ATC is an objective source of information regarding the components of an RFID system, including readers, antennas and inlay packaging.

"There is no one-size-fits-all solution," Cornick says. "We make it our business to understand the relative strengths and weaknesses of the different reader choices, articulate the strengths and weaknesses of different tag designs and offer objective, analytic data to customers to help them make the right choice to optimize the performance of their application."

Companies such as [Monsanto](#), a multinational provider of bioengineered agricultural products,

employed the ATC to help select the hardware and software it utilized during its RFID trial. Last year, the company evaluated the use of passive RFID tags to identify individual seed packets as they were shipped from its Middleton, Wis., facility to its network of test farms, where new, genetically engineered seed is tested (see [Monsanto Hopes to Sow Benefits by Tagging Seed Packets](#)).

The U.K. research team concentrates on the physics of RFID, Cornick says, developing tests to assess how tag and interrogator combinations work together, and to evaluate chip performance and antenna design. "We rigorously test new chips for functionality," he says, "well beyond the manufacturer's claims—which usually involve sensitivity and memory—to understand communication rates, interference rejection, compliance with the Gen 2 protocol and the ease of accessing special features that are part of Gen 2."

Avery Dennison RFID partners with a number of companies, including label converters, independent software vendors and systems integrators. "Understanding compatibility issues between new chips and the hardware choices available helps Avery Dennison RFID partners get it right the first time," Cornick says. "No surprises—that's the goal!"

Finally, all three of Avery Dennison RFID's R&D units work on application development, often at a customer's behest. "Our technical teams will work closely with the [customer] to investigate the holistic RFID solution to meet their technical and business needs," Cornick says. The company also focuses its R&D efforts on improving existing uses of RFID, particularly those in the supply chain, retail apparel and aviation sectors. At present, the company is investing in R&D on several new RFID applications, including employing the technology to track data cartridges and optical media (such as CDs and DVDs), electronics assets (such as TV set-top boxes and rack servers) and horticulture products (plants or cut flowers).

According to Cornick, RFID continues to make inroads in item-level tracking, despite conventional wisdom suggesting the industry wouldn't use the technology for item-level tracking until tags dropped below five cents apiece. "The reality is that we are seeing strong traction in item-level tagging with tag prices well above that level," he says. Currently, he notes, a small, general-purpose label containing an RFID inlay costs between 10 and 12 cents, whereas specialty labels, encapsulated tags and high-performance tags range in price from 15 cents to several dollars, with all tag prices varying depending on volume.

Additionally, RFID is gaining momentum in tracking cold-chain products. Earlier this month, Avery Dennison RFID and [Impinj](#) joined forces to help European retailer [Metro Group](#) implement a pilot to track fresh meat in the retailer's butcher departments, and at checkout lanes (see [At Metro's New Future Store, RFID Helps Assure Meat Quality](#).) "This project does finally answer that age-old question of 'Where's the beef?'" Cornick says.