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**by Arthur Blank & Co., Inc.
*Is RFID In Your Future?***

Forget the back burner, it's time to deal with the inevitable.

Standards are being ratified, chips are being built, inlays are being designed, and printers and readers are being tested. At this point, radio frequency identification (RFID) technology is just looking for trouble. As Bill Allen, director of strategic alliances for Dallas-based Texas Instruments (TI) stated, RFID, in most cases, is a solution waiting for a problem. He pointed out that for many people, RFID is just coming onto their radar screens, so they imagine that it's an emerging technology. "In some markets it is," Allen continued, "but there are many mature markets for RFID—some right here in the United States."

For example, cars and trucks have been equipped with TI's RFID-enabled anti-theft devices for more than 10 years now, and the Exxon/Mobil Speedpass payment system was introduced eight years ago. In addition, he noted that the U.S. has been using RFID in the payment market for more than eight years, whereas Europeans are still utilizing the smart chip. "American Express is rolling out an RFID-enabled credit card later this year," continued Allen, "and Master Card and Visa are right behind them."

Thanks to the Wal Mart mandate, the technology that came on the scene 15 years ago for livestock tracking in Europe to combat mad cow disease is about to revolutionize the retail market. "The retail industry has always been the Holy Grail of RFID because there are so many items moving through the supply chain," he said.

Another problem begging for an RFID solution exists within the pharmaceutical industry, where approximately four to seven percent of all pharmaceuticals currently in the supply chain are counterfeit. "The FDA has strongly recommend that pharmaceutical manufactures utilize RFID to

create an electronic pedigree," reported Allen. "Read/write capabilities allow for label updating on the fly to show a chain-of-custody. The state of Florida has already mandated the electronic pedigree, which is being rolled out later this year."

At TI, RFID is converging with EPC (electronic product code) and sensor technology for new applications that go beyond identification to include everything from authentication to temperature, time expiration, pressure and condition monitoring.

Slowly But Surely

So, what does all of this mean for business form distributors? According to Mark Freeman, systems consultant for Inspec Tech, Valley Head, Ala., essentially, the same opportunities for growth and profitability ushered in by bar code technology.

"Wal Mart was the big gorilla pounding the table for bar codes back in the 80s—now everyone uses bar coding. And, so it will be with RFID," he said. "Sure, it's going to be a slow, methodical maturing of the RFID market, and those in the industry who understand this are the ones who are going to make the money." Already, some manufacturers serving the independent supply channel are filling orders for RFID products. Freeman estimated that RFID products constitute three percent of his company's orders at present. Inspec Tech specializes in stock inlays featuring 98 percent accurate read-rates. The raw inlays are converted into whatever size is needed, and are then inserted into tags and labels, inspected, tested and shipped the same day. The minimum is 150 tags. "We're just starting, and these are small orders," he explained.

"The big players, such as Alien, Matric, Phillips and TI have already gobbled up the big orders. But, there are plenty of the smaller orders that the big guys don't care about, and these are the accounts that we treasure." Boston-based Arthur Blank & Co., Inc. has added RFID to its card production line within the last 12 to 18 months, and has also begun to fill a few small orders. "These are mostly cards for mass transit 'wave-and-pay' applications," reported Jake Jacobs,

senior vice president of sales. With no insertion required, as with smart cards, and no mag strip to swipe, RFID significantly cuts transaction periods. Passengers simply wave the card within five to 10 inches of a reader. "The information is captured, one fare is deducted and the turnstile automatically releases to quickly move large crowds of people through and onto mass transit," he explained.

Another growing market is quick service restaurants that are seeking to hasten transactions, eliminate handling cash and credit cards, and stand out from the competition.

"Wave-and-pay is new, it's hip, and it will help to attract people and enhance loyalty," Jacobs continued. "McDonald's is in the midst of a test launch, and others are looking at the technology." Arthur Blank & Co., Inc. sees innovative point-of-service applications for RFID cards that enhanced security and tracking for access control, identification and employee safety; "line busting" loyalty card programs for fast-food and other drive-up settings where customers' orders or preferences can speed service; and customer service programs where stored information is automatically accessed to provide improved service.

Allen observed that in addition to mega merchants, some small- and mid-sized companies are availing themselves of RFID's benefits to boost profits and streamline operations. He referred to one company that delivers four million plastic trays holding chilled food items that used to stack the trays 24 to a cart and use a hand-held device to read bar codes on each tray. Since embedding the trays with RFID-enabled EPC tags, the carts are simply rolled through an antenna system and all of the trays are read in seconds. "The company not only reduced touch-labor by 80 percent, but it extended the time the chilled products are on the shelf and ready for purchase," said Allen.

Ramping Up, Rolling Out

Despite the indisputable benefits, pricing and standardization issues are considered by many to be the chief stumbling blocks to RFID implementations.

Allen explained that costs for implementing RFID depend on the number of touch points and read points that are required, for instance whether it's just around warehouse dock doors or throughout the warehouse, as well. "Costs can be controlled from a reader perspective by having multiple antenna systems working off of a single reader," he added. "In terms of hardware, a reader is the single most expensive component, followed by the antenna. The tags can cost less than .30 a piece, but when tagging thousands and thousands of items, it adds up. A mid-size company could spend \$100,000 on an RFID system and accomplish exactly what it wants and see a return on investment. A major retailer with multiple national and even world-wide locations could spend hundreds of millions."

Said Jacobs, "The fact that end-users will have to make a massive investment in infrastructure and technology to accept these products is probably our biggest challenge as a card manufacturer. Even though we have the product, we're stuck in a reactive mode while banks and credit card companies looking at RFID as payment vehicles develop the infrastructure at the ATM or point-of-sale level—such as in restaurants, grocery stores and retail establishments."

However, as Freeman sees it, the backbone of the technology is already in most manufacturing plants currently using bar coding. "It just requires adding another thermal transfer printer that has a read/write engine in it," he said. "Readers will also have to be tweaked, but that won't require massive amounts of energy. This is where a lot of the hype is coming from. An RFID reader is just decoding data and sending it to a host somewhere. But, it's still just data—not some magical stuff floating around in the air."

Another factor impacting the RFID industry is standardization, which leads to hardware interoperability. Assuring end-users that readers from different manufacturers will perform across different systems helps to speed up adoption, and subsequently increases volume, decreases costs and stimulates demand. Allen explained that different markets have their own standards, such as the smart label standard, ISO/IEC 15693, ratified in 2000. There is also the recently ratified, next-generation EPCglobal Inc.

ultra-high frequency (UHF) standard for the retail market which has been eagerly awaited. "Now, companies such as TI can move forward in building RFID chips and tags that meet the EPC specifications for that standard," continued Allen. "TI will be delivering the EPC Generation 2 tag emulators to five of the leading RFID reader and printer manufacturers in Q3."

Deal Breakers

This is more good news for value-added resellers, but Jacobs cautioned that at this early stage in the maturation curve, the companies selling the readers and the software are going to want to drive the marketing and control the sales. He said that to get even a smidgen of the pie, distributors will have to be highly technically sophisticated and have strong relationships with the reader and software companies. "Even then, these are multi-billion dollar companies with direct sales forces and one-stop-shop RFID solutions who will tend to question the value a distributor brings to the equation that carries the day."

Still, Jacobs emphasized the Arthur Blank & Co., Inc. is more than willing to train any distributor on how the RFID cards are made and used. "In our commitment to business forms distributors, we want to provide information about the next hot card frontier," he said. "Perhaps five years from now when RFID cards are more prevalent, distributors working with customers on inventory and supply chain management will see more success." Said Freeman. "RFID is not rocket science. Don't get me wrong, it's very technical, but we assist distributors by helping them in the printer integration side." He went on to say that Inspec Tech's RFID product meshed well with what the company was already doing with bar code technology, so except for the drivers and the printers around that technology there wasn't that big of a learning curve.

"Distributors will find the same thing," he continued. "They just need to tell us what frequency is required and what type of printer is being used. Because we have all of the different printers here in our plant we know what pitch it has to be on, and the proper position of the inlay on the X Y dimension of a label or tag for that particular printer to work." Freeman also

commented on supply shortages affecting the RFID industry that he expects will continue for awhile. "First of all, there is a silicon shortage," he said, "and with the EPC Gen 2 being recently ratified, the RFID market is focusing on the big accounts making it hard for others to find inlays, even though the price has gone down significantly—it's a strange market." However, Freeman encouraged distributors to start exploring interest in RFID solutions with their current customers, handing out samples and networking with industry professionals at trade shows.

"I would particularly focus on those customers in the medical industry and those supplying major retailers. The vast majority of manufacturers will be using RFID—not to replace bar coding, but to enhance it," he advised. "Believe me, people are reading, customers will know what the distributors are talking about."

All three contributors agreed that RFID has come a long way, and has a long way yet to go. Everyone is still learning and the machinery and equipment surrounding the protocols remains a bit unstable at this point, but it's certainly getting there.