

At Midwest Acoust-A-Fiber's factory, workers scan bar codes to identify items, while RFID identifies their location within the plant.

By Claire Swedberg

Dec. 4, 2008—[Midwest Acoust-A-Fiber](#) (MWAAF), which supplies automakers with high-temperature insulation and noise-suppressing composite fiber materials for new vehicles, is employing a hybrid RFID-based system at one of its two plants in Delaware, Ohio, in order to track raw materials as they enter the facility and are used in manufacturing. The factory also utilizes the system, provided by [Analytica](#), to track its finished products when they are placed in a storage area at the warehouse, and when they are shipped to customers.

Midwest Acoust-A-Fiber supplies its products to such companies as [General Motors](#), [Chrysler](#) and [Ford Motor Co.](#). The firm custom-designs heat shields used in vehicular exhaust systems, catalytic converters and engine manifolds sustaining temperature ranges of up to 2,300 degrees Fahrenheit (1,260 degrees Celsius). The company also manufactures products to absorb noise coming from an engine, or under the body of a vehicle. At its two facilities, Midwest Acoust-A-Fiber employs 150 workers and operates 24 hours a day, five days a week, to meet the needs of its customers. Its annual revenues in 2007 was reported as topping \$25 million.

Fiberglass and other raw materials arrive at the plant in rolls that are stored and then consumed during manufacturing. Finished products are stored in MWAAF's warehouse, then later sent to automotive manufacturers. With a growing operation in a limited amount of space, the company has developed a very tightly designed manufacturing facility with a growing number of assembly lines and production output. By employing bar codes with RFID, the firm can ensure it has the materials it needs on hand, without developing a space-consuming overstock.

Manually inputted records of shipment arrivals and departures provided MWAAF's managers with a solid understanding of the raw materials coming into the factory, as well as the shipments of finished products sent out. However, their knowledge of the plant's raw-material consumption and productivity rates was limited to a set of weekly or monthly reports. Three separate employee shifts work throughout each 24-hour period, making it difficult for workers to have a clear understanding of where materials and finished products were located, and what the quantity was.

"One of the main things we wanted," says Andrew Callahan, Midwest Acoust-A-Fiber's IT manager, "was to monitor our raw material, so that we had an accurate inventory count at any time."

Midwest Acoust-A-Fiber sought a solution that would take advantage of bar-coded labels already attached to rolls of raw material arriving from suppliers, as well as the bar-coded labels MWAAF places on boxes of its finished products for auto manufacturers. The bar-coding system alone would not allow the company to see where products were located within the facility, however, because the system knew only that the bar codes had been read, not where they had been read.

In early 2007, MWAAF first began working with Analytica, which developed a hybrid system using bar codes to identify each item, and RFID to determine the locations of those items within the building, explains Analytica's president, Vikram Seshadri. By December 2007, the system was deployed at one assembly line, and in 2008, it was expanded to the remainder of the plant.

With the new system, when MWAAF employees receive rolls of raw materials, they utilize an Analytica handheld device to scan each roll's bar-code label, then transmit the bar-code number, as well as the device's own unique RFID number. The device's 2.4 GHz signal is received by the nearest Analytica RFID reader node. MWAAF installed an interrogator at the end of each of its 20 assembly lines, as well as four more in the warehouse areas. Each reader represents one zone within the building. An interrogator passes this data, including its own ID number, from reader node to reader node, until it reaches the company's back-end system.

Analytica's Crossfire Web-based software provides a display of the facility's floor map, with Google Maps-style markers indicating specific items, and the specific zone in which they can be found. Crossfire, integrated into MWAAF's ERP system, also provides business analytics—such as how long it takes for a roll of raw material to be consumed on a particular assembly line—and thereby calculates the operation's efficiency. Midwest Acoust-A-Fiber can then see when the roll was received, when it was moved into storage, and when it was brought to an assembly line, as well as to which assembly line it went.

When a product is assembled and packed into a box, a bar-coded label is applied to that carton and scanned as the item is moved into a finished-product storage area or is shipped to a customer, with the RFID and bar-code scanner again transmitting the zone in which it is located. One zone is dedicated to outgoing shipments, so that whenever a product is scanned in that location, the system automatically knows that that product is shipping.

The greatest challenge with the system, Callahan says, involved ensuring against cross-reads between the multiple readers. The reader nodes, suspended from the ceiling above warehouse space and assembly lines, have a read range of approximately 20 feet. "We combated the problems of cross-reads by turning down the [sensitivity of] the readers," he says. "We've got it working pretty decently now."

Any problems the system encounters, Callahan explains, tend to be the result of improper use by the staff, such as failing to scan the bar-coded labels. The RFID readers need to be rugged in order to sustain the high temperatures on the plant floor—as much as 140 degrees Fahrenheit (60 degrees Celsius). The handheld scanners suffer a great deal of abuse as well, he adds, since they can often be dropped. "We've been very happy with Analytica," he says, "They've done a great job."

According to Vikram, the ROI for this deployment was calculated in two ways. One, he says, pertained to "time saved in getting real-time information so that production staff can make good decisions, and the other is reducing the wastage and increasing productivity through continuous and real-time monitoring."

Car Insulation Maker Uses Hybrid System to Track Materials, Products

Topics/Verticals: [Inventory/Warehouse Management](#), [Transport](#), [More...](#)

Callahan, however, would not say when he expects Midwest Acoust-A-Fiber to recoup its investment.