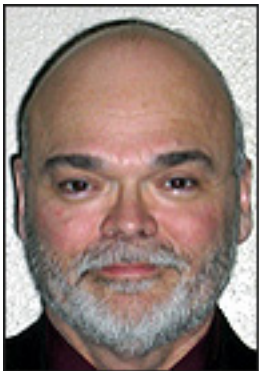


The first project within this initiative will use 433 MHz active RFID tags to track flatbed trailers transporting parts and subassemblies at the company's manufacturing plant in Decatur.

By Mary Catherine O'Connor

Feb. 12, 2007—When it comes to designing and manufacturing mining and other earth-moving equipment, Byron Blackburn thinks [Caterpillar](#) has the job down pat. "We are the largest supplier of mining equipment in the world," he says. "No one has the market share that we have." However, keeping track of all the earth-moving equipment it makes, sells and rents around the world is a monumental task, one the company currently manages largely through bar codes and paper trails.

Blackburn, a new technology analyst for Caterpillar's technology research and development division, thinks the company can and should improve its supply chain visibility through a combination of auto-ID technologies, including RFID. To that end, he is leading a company-wide, global initiative to improve overall products and parts visibility.



*Caterpillar's Byron
Blackburn*

"Do we have a problem in parts logistics? Everyone does," says Blackburn, explaining that Caterpillar is exploring RFID and other technologies not to solve a specific issue or set of issues unique to Caterpillar, but rather to improve its control over its parts and finished products. Better control and more visibility, he notes, will lead to improvements in its ability to fill orders and satisfy customers.

"We have just as much outbound supply chain as inbound supply chain," Blackburn says, "and the outbound equates to customer service. Better visibility will let us circumvent supply chain problems before they reach the customer." Caterpillar also expects better product visibility to enable the company to cut costs.

"We'd like to have better inventory visibility as product moves around the world. Most large mining equipment is shipped to the end user in sections that are assembled at the site. A mining truck might ship out on seven separate railcars," Blackburn explains. "Some of the welding is even done at job site, and right now we use bar coding and tear sheets to keep this straight."

The company had \$41.5 billion in revenue in 2006 and operates a global sales and manufacturing system. At present, it is taking a measured approach to revamping its parts- and product-tracking system. Blackburn has formed a cross-functional team within the company—the material tracking and tracing council—to develop a roadmap and contract technology-integration partners to help Caterpillar achieve its mission. The firm has decided to begin integrating RFID into its Decatur, Ill., manufacturing facility to improve parts and subassembly tracking.

The first project within this initiative, set to launch during the second quarter of 2007, will employ 433 MHz active RFID tags to track the flatbed trailers used by the company to transport parts and subassemblies at its Decatur plant, which takes up millions of square feet and assembles upwards of 30,000 parts during any given day. The trailers will be tagged with [Wavetrend Technologies](#) industrial asset tags and tracked as they move through choke points located between the plant's distribution center, manufacturing area and inventory warehouse. To achieve this visibility, those choke points will be equipped with Wavetrend RFID interrogators.

At a distribution center at the facility, the flatbeds—basically, larger, more rugged versions of the luggage carts, linked together and pulled by small trucks on an airport tarmac—are assembled into trains and loaded with totes filled with parts and subassemblies. As the flatbeds enter or exit the DC, manufacturing area or inventory warehouse, interrogators located at the entry and exit points will collect the unique ID and time stamps from a tag attached to each flatbed.

The readers will send this data to Edge Base, an RFID middleware suite developed by [Radiant Wave](#), a RFID systems integrator selected by Caterpillar's material tracking and tracing council for the project. Edge Base will control and manage the network of readers, filtering any extraneous tag reads captured before forwarding the data to Mobile Resource Management software made by [Red Prairie](#), a Milwaukee provider of supply chain, labor management and asset utilization software.

Later this year, Blackburn says, once the flatbeds are all being effectively tracked throughout the facility, Caterpillar will also begin tagging and tracking the totes themselves. By linking the tote IDs with the flatbeds carrying them and with paper-based records of what the totes carry, Caterpillar hopes to improve visibility into its work-in-progress manufacturing by knowing more precisely where parts and subassemblies are within the manufacturing plant.

Eventually, Blackburn would like to see Caterpillar's parts suppliers begin attaching RFID tags to individual parts received at the Decatur facility. This would allow Caterpillar to improve its RFID-enabled visibility from the tote level to the individual part level by using an electronic record at the part-level, rather than a paper record. This should result in more accurate inventory and work-in-progress records at the facility.

"To stay number one in the marketplace, we have to constantly be looking at ways of doing things better, faster and cheaper," Blackburn states, "and RFID looks like a way we might be able to do that."