

**Active RFID tags and readers help work crews to locate machinery, even when obscured by tall grass and deep snow, ensuring that the company doesn't order unneeded assets.**

By Claire Swedberg

Nov. 3, 2009—[North American Construction Group](#) (NACG), based in Edmonton, Alberta, is deploying RFID technology to track the thousands of high-value assets its crews use at construction sites throughout western Canada. The system will enable the firm to know on a daily basis which assets are where, thereby reducing the need to order or rent new items as replacements for equipment that cannot be located. The system employs software and hardware from [Identec Solutions](#), and is being provided by [Libramation](#), which oversaw the system's installation, as well as the training of NACG's staff regarding its use.

Until now, NACG's workers had a time-consuming task whenever they searched for an asset. Equipment is stored or used at various sites—typically, between nine and 12—across Alberta, British Columbia and parts of Saskatchewan, at construction sites for refineries, pipelines or mines. Tracking assets in a lay-down yard (a large section of a construction site where equipment is stored) was typically accomplished manually, with crews physically checking inventory levels and writing down serial numbers on a piece of paper. In the typical long, cold winters of Alberta, employees often had to dig through the snow in order to determine what was there, says Carlos Lopez, NACG's field engineer for fleet management.



NACG's Carlos Lopez

If a particular piece of equipment is required—such as a bucket, generator, light tower or compressor—locating that item often meant calling different work sites and sending crews to search for it. "Tracking physical inventory can be very difficult because of the multiple sites," Lopez says. If the company could not find that item, it sometimes had to purchase and ship another piece of equipment to replace it, thus leading to excess inventory.

The company had already been utilizing a GPS tracking system to locate its trucks in real time, with Google Earth software that allows management at the NACG office to view an image of each vehicle on a map of the multiple job sites. This GPS unit employs GPRS cellular connections to report the vehicles' locations. However, tagging each piece of equipment with such a GPS/GPRS device would have been expensive.

In spring 2009, following an especially snowy winter, the company began searching for an RFID solution for tracking assets. Libramation—which originally had focused on providing RFID technology to libraries and, more recently, to the oil industry—presented its solution to NACG. The construction services firm then contracted with Libramation to begin testing the system with approximately 40 assets on one site, says Frank Mussche, Libramation's president.

The pilot, which ran from June through August, demonstrated that NACG's managers could use Libramation's solution successfully to track assets remotely from its office in Edmonton, and that NACG crews could utilize it to locate assets on a work site. NACG now has begun to tag between 900 and 1,000 pieces of equipment, focusing on all assets with a value of \$5,000 or more. The tagging will be completed by the end of this year, Lopez says. Excavator buckets will be the most difficult to tag, he adds, since they need to be idle when they are tagged, and are usually in use.

The Identec ILR i-B2L tags are generally attached to assets by means of a wire, though in some cases, the tag is protected by a U-shaped frame welded to the equipment, to protect the tag from physical impact. The tags emit a 915 MHz signal, encoded with the tag's unique ID number, at a rate of once every two seconds, to Identec IntelliFIND handheld readers that construction crews will bring onto the site on a daily basis. The tag's ID number is linked to the equipment's serial number and identifying description in Identec software residing on NACG's back-end system, from a distance of about 300 feet. The handheld comes equipped with GPS functionality, so it records its own location at the time it receives a tag's signal, transmitting the tag ID number and location to the back-end system via a Wi-Fi connection, or storing the data to be downloaded at the office later that day.

By simply carrying the readers as they drive through the job site, Lopez hopes, the crew will be able to read every tagged item and update the system each day regarding which items are at which job site, and approximately where, within several hundred feet. In the event a specific item is required, the handheld reader can be used to locate it. The user first inputs the description or serial number of the item being sought, and the handheld's software then calculates the location of that item—or the closest item of that description—based on previous reads, as well as the reader's GPS location at the time of those reads. The handheld reader then displays an arrow pointing in that item's general direction. By walking in the direction of that arrow, the user eventually comes within read range of the item, at which time the system software recognizes the unique ID number on the RFID tag and begins to flash, thereby allowing the user to begin physically searching for that equipment.

The Identec software residing on NACG's back-end server integrates with the construction group's Google Earth software. In addition to indicating vehicles' locations on maps of the company's work sites, the Google Earth software displays the locations where equipment tags were read. By scrolling over the icons, users—such as managers at NACG's Edmonton office—can read a description of each item.

Lopez says he expects the system to reduce the cost of renting additional equipment, as well as eliminate the need to purchase duplicate pieces of equipment when one item goes missing. "It's working good so far," he says. "Now, we're just waiting to see what happens when it snows."