

# Equipment Inspectors Find Safety in RFID

Construction equipment suppliers use N4 Systems' RFID-based solution to track inspection records of equipment in the field, at work sites and mines.

By Claire Swedberg

May 9, 2008—A growing number of construction product management companies are employing an RFID system known as Field ID, provided by N4 Systems, to allow their inspectors to create documents automatically in the field. Elko Wire Rope & Mining Supply, located in Elko, Nev., plans to begin utilizing the N4 Systems solution in June, while Hercules SLR deployed its new RFID system with N4 in February of this year.

Elko Wire Rope & Mining Supply provides steel rope, rigging and hoists for workers in the mining industry, as well as for drilling and construction companies. The company also provides an inspection service, sending staff members to job sites to examine equipment in use, and to report that equipment's condition to the customer. The service submits reports to such regulating bodies as the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA).

At this point, says Neely Hammond, Elko's wire rope facility manager, "everything is done on paper." The company's two inspectors travel to mines and other work sites in Nevada and Utah, where they inspect equipment and write paper reports that they then return to the Elko office. Administrative workers either store the documents in a file cabinet, input them into a computer system or summarize the details in reports e-mailed to customers.

Hammond notes several weaknesses inherent in this approach, however. Paper reports can get lost and be hard to track, and retyping them into the computer system is labor-intensive. What's more, it takes time for the customer to receive a paper copy of the inspection, and that customer must store the paper inspection records and ensure they are easy to access in case government agencies want to review them.

In addition, inspectors spend a great deal of time filling out forms. Just visually checking the serial number written on a particular piece of equipment can be difficult in a dusty environment such as a mine. The serial number can be recorded incorrectly, in which case a link is lost in the equipment's inspection records. "When any mistake is made, you can lose the audit trail," says Somen Mondal, N4 Systems' co-CEO.

With the N4 system, Mondal says, much of that process is automated. Elko's inspectors will be equipped with two Psion Teklogix Workabout Pro G2 handheld mobile computers with 13.56 MHz RFID interrogators. Each piece of safety equipment is tagged with one of several types of high-frequency (HF) tags complying with the ISO 15693 standard, including tags provided by Holland 1916 that are attached by chain to large pieces of metal equipment.

The handheld computers can hold up to 8 gigabytes of item-related data, which can be downloaded from a dedicated N4 Systems Web site utilizing an Ethernet cable at the office. Each handheld device stores data about the items on the work site, including the serial number encoded to each item's RFID tag. When an

inspector employs the interrogator to read a tag's serial number, the handheld device uses that number to identify the type of equipment attached to it, then proceeds to prompt inspectors as to which procedure they should conduct for that specific category of equipment. Inspectors respond to prompts on the device as they complete the inspection.

Once the inspectors return to the office, the data is uploaded to the Internet-based server hosted by N4 Systems. N4 System software then makes inspection records immediately available to both Elko and the customer. "We expect this to save a lot of time," Hammond says.

Hercules SLR is currently using N4's software system to better manage its safety compliance. Like Elko, Hercules manufactures lifting and rigging products such as wire rope, chain and web slings, as well as fall-protection harnesses, that all need to be inspected. Some customers contract with Hercules to provide that inspection service. Customers of the Canadian company, which conducts business in Montreal and Halifax, must inspect equipment on a regular basis to meet several government agencies' regulations.

Hercules employs RFID-enabled Psion Teklogix mobile computers to inspect as many as a thousand pieces of equipment in one week. Before installing the N4 system in February, Hercules had been using an RFID solution from another vendor, according to N4 Systems' CEO, Shaun Ricci. However, he says, the previous system was unable to manage the large amount of data exchange necessary for such a high volume of inspections. "They were not experiencing successful uploading of data," Ricci notes.

RELATED\_ARTICLES About 20 inspectors each use a Psion Teklogix mobile device when conducting a scheduled inspection or obtaining data about a specific piece of equipment following an accident or safety complaints. When an inspector scans an item's RFID tag, the handheld computer calls up its stored history of the item's inspections and displays that information on its screen. Although the devices can transmit data using a Wi-Fi or cellular connection, Hercules is uploading information at the office instead, in large part because there is no Wi-Fi or cellular connection available at the remote locations of most of its customers' work sites.

In the fall of 2007, hoist ring manufacturer [Jergens](#) began utilizing the N4 system for tracking the life cycle of its crane links (see [Hoist-Ring Manufacturer Using RFID to Carry Life-Cycle Data](#)). And in 2006, [Unirop](#) began employing a similar system to trace its chain and synthetic slings (see [Unirop RFID-Enables Inspections for Industrial Slings](#)).

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