

Magnor Plant is using RFID tags on safety and lifting equipment at British construction sites to expedite the inspection process, providing results in a matter of hours rather than weeks.

By Claire Swedberg

July 27, 2010—British construction equipment services firm Magnor Plant Ltd., a division of construction company [Morgan Sindall](#), has shaved weeks off its safety equipment inspection documentation process with an RFID system that enables inspectors to carry out the process electronically, print a document on-site and have it signed on the same day. Without radio frequency identification, the same process could take weeks to complete.

Magnor leases winches and other machinery for lifting heavy construction equipment, as well as safety devices (such as gas detectors, chemical rebreathers and oxygen masks), vehicles and office trailers to Morgan Sindall, which uses the equipment at the many construction sites it operates across the United Kingdom, as well as to other external customers. With its RFID system, Magnor has a record of the location of each piece of lifting and safety equipment—approximately 4,000 pieces at a total of about 40 sites—and its inspection results on the same day that an inspection is performed, says Jonathan Hall, Magnor's general manager. The company is employing a solution known as Assettagz, from [4hSolutions](#), that includes handheld readers, RFID tags and a hosted server that Magnor can access in order to obtain inspection and location data.



An inspector uses a handheld device to read an RFID tag attached to the top of a fire extinguisher.

Morgan Sindall's projects include railways, highways, housing and commercial properties. The lifting gear and safety equipment deployed there must be examined every six months. To meet this requirement, Magnor sends inspectors to all of the sites throughout England, Scotland and Wales, to identify and inspect every piece of equipment used by Morgan Sindall's workers. If any device fails inspection, it is removed from service until it has been properly maintained, repaired or replaced.

There are as many as 600 pieces of equipment on each job site, many of which require regular inspections. Traditionally, inspections were documented manually, using paper and pen. Each inspector wrote down the serial number of each piece of equipment, inspected that device and recorded the inspection results on paper as well. That paper was then taken or mailed back to Magnor's office in Rugby, Warwickshire, where a records manager would read it over and begin inputting the results. If he or she had trouble reading an inspector's handwriting, a phone call would need to be placed to that individual for clarification.

The system not only allowed for errors, it was also time-consuming for the staff, and data about each inspection often did not become available electronically until many days after the inspection had taken place. It could take weeks before a construction site's manager received paperwork regarding the inspection of the equipment on his or her site. In addition, if proper records regarding the certification of a particular piece of equipment were unavailable at a job site during an inspection, the inspector had to remove that item from service—which, in some cases, caused inconvenience and delays for work crews that needed the safety equipment.

In early 2009, Magnor met with 4hSolutions, which offered a tracking system similar to one it provides to other companies, including [Byrne Group](#), (see story [Byrne Group Automates Asset Management, Orders](#).) Unlike Byrne Group, however, Magnor's key challenge involved tracking inspections, more than determining than the location of equipment.

With the system provided by 4hSolutions, Magnor tags each piece of lifting or safety equipment with an Assettagz adhesive 125 kHz RFID passive tag, using a proprietary air-interface protocol. Each tag has a unique ID number that links to data about that particular item on 4hSolutions' hosted server, explains Andrew Davies, the company's managing director. The ID number and description are entered into the Assettagz server software, and the construction site to which a piece of equipment is assigned is then entered into the system when that item is sent to that location.

Each of Magnor's three inspectors carries a Workabout Pro handheld computer with a built-in RFID reader, Assettagz software and a GPRS connection to 4hSolutions' server. When conducting an inspection, says Stuart Faulkner, Magnor's safety equipment manager, an inspector first enters a password indicating his or her own identity. That inspector then reads the item's tag, causing the handheld to display a drop-down menu of instructions and prompts that guide that individual through the inspection process. That information is transmitted to the server and made available to Magnor's management, and the inspector can then print the results on-site and sign the document before leaving. If the equipment fails to pass inspection, the inspector indicates that fact on the handheld reader and removes the equipment from service.

After determining that the system was effective at tracking inspections, Davies says, Magnor opted to utilize it for fire extinguishers as well. There are between 30 and 50 extinguishers on each job site. Like the other types of safety equipment, extinguishers require regular inspections. An inspector now scans

the ID number of an RFID tag attached to the top of an extinguisher, and the Assettagz software on the reader displays details about that item, such as its type (foam or water). He or she then proceeds with the inspection as with other equipment, and the data is forwarded to the server. The Assettagz software can also issue alerts to indicate which pieces of equipment have an inspection date that is approaching, or that has passed, or provide a list of items removed from service due to failed inspections.

According to Hall, the inspectors were initially dubious about the technology. "There was some reluctance to move forward with it," he states, "but within a few weeks, they were quite comfortable with it." In fact, Faulkner estimates, an inspection that typically took 45 minutes to an hour prior to the RFID system's deployment, now takes only about 15 to 20 minutes. And the site managers are happy with the results, Hall adds. What's more, the RFID system enables Magnor to promise same-day inspection results to the outside companies to which it hopes to lease its safety equipment and inspection services. "We've made it part of our sales pitch," he says. "We've won work on the back of it. The investment was minimal compared to the benefits we've seen."