

Tank-Maker Uses RFID to Track Tools

General Dynamics Land Systems, a manufacturer of amphibious combat vehicles, is using passive RFID tags to help ensure it has enough tools to get the job done.

By Beth Bacheldor

May 30, 2006—Radio frequency identification has found its way into the production of military tanks. General Dynamics Land Systems (GDLS), a maker of amphibious combat vehicles for the U.S. Army, the Marine Corps and allied nations, is using RFID to keep track of the high-cost tools—such as torque wrenches worth tens of thousands of dollars—it uses to build, test and repair the armored vehicles.

The objective, according to GDLS engineers, is to help the company manage expensive tools and test equipment shared by about 60 employees. GDLS reports that the implementation is helping it prepare to meet the U.S. Department of Defense's requirement that suppliers affix passive RFID tags on cases and pallets of goods. The firm hopes the company will provide the company a better understanding of how the technology works, how RF interference impacts tag placements, the kinds of data an RFID system generates and how to use that data.

GDLS is a General Dynamics Corp. subsidiary based in Sterling Heights, Mich. The firm has installed an RFID portal at the entrance of a tool room housing tools and test equipment in the Joint Systems Manufacturing Center, a U.S. government-owned facility in Lima, Ohio, operated by GDLS. The company is tagging all the equipment with passive Gen 2 EPC RFID tags and providing badges embedded with Gen 2 tags to its personnel. Employees who need tools must unlock the room by presenting their badges to an RFID interrogator (reader). The reader then scans any RFID tags on equipment taken from the area, creating a record of the employees and the equipment removed. Once workers return the equipment, the reader scans their badges and tool tags again.

The RFID implementation was designed and installed by Data Support Inc. Headquartered in Nanuet, N.Y., Data Support specializes in automated data-collection and label-printing systems. Tom McDonald, the company's president, says the RFID system provides GDLS an alternative to buying spare equipment. "GDLS wasn't worried that employees would take the tools home or that they would be stolen, but sometimes employees would take tools and put them in their lockers at the end of shifts so the tools would be there when they came in the next day. But the second shift would come in and not have the tools, or know where they are. Instead of buying a bunch of tools so there's always enough tools to get the job done, they now have instant access to information that says who has the tool, without having someone man the tool room."

The system, according to GDLS engineers, includes a Symbol Technology XR-400 reader, tool-tracking software, and a high-performance reader antenna. Originally, the company applied EPC Class 0+ tags to the tools and badges, but it is now replacing those tags with Symbol's Trident tag Gen 2 UHF tags. "The real challenge was the tags for the whole system," says McDonald. The company had to find work-arounds for such issues as RF interference caused by the metal in the tools and in the doorway leading to tool room. It also needed to figure out such things as where to attach the tags onto the tools, and whether employees would wear badges around their necks or wave them in front of an interrogator.

"We tested all the barriers between the tools and tags and tested lots of tag configurations, and we think now we've got the perfect combination. The Gen 2 tags are very reliable reads."

GDLS spent between \$35,000 and \$40,000 on the project, including the hardware, software, installation and training.

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