

For its 2009 F-Series pickups and E-Series vans, the company is offering its Tool Link option, featuring a built-in EPC Gen 2 RFID interrogator for tracking equipment and other assets used in the construction industry.

By Mary Catherine O'Connor

Feb. 6, 2008—You know that supply chain RFID mantra—the right product, at the right place, at the right time? At the consumer-oriented [Chicago Auto Show](#), which opens this week, Ford is rolling out a new take on the concept—the right tool, in the right place, at the right time—to contractors and other building professionals who drive trucks and vans to work sites.

To that end, Ford has partnered with RFID company [ThingMagic](#) and toolmaker [DeWalt](#) to develop Tool Link, an RFID asset-tracking application being offered as a feature on Ford's 2009 F-Series pickup trucks and E-Series vans.



Each time the vehicle's engine starts, a built-in interrogator reads the tags of items placed in the bed or cargo hold.

The RFID application is one tool in the automaker's new [Ford Work Solution](#) platform, which also includes an in-dash computer that—in addition to running the asset-tracking software used in combination with a vehicle's built-in ThingMagic Mercury 5e interrogator—serves up high-speed Internet access via the [Sprint](#) Mobile Broadband Network. The computer also provides GPS navigation.

"There has been a great collaboration between all parties involved to create an RFID system that works

well and is easy to use," says Edward Pleet, Ford Work Solutions' business and product development manager.

Companies and individuals who buy the RFID-enabled trucks and vans will need to place passive EPC Gen 2 UHF tags on their tools (or anything they wish to track), then put them in the vehicles' beds and cargo holds, which are fitted with RFID interrogator antennas. They'll then be able to use the in-dash computer's touch screen, or a keyboard plugged into the computer, to associate the number on each tag with the object to which it is attached.

Each time the vehicle's engine starts, the interrogator automatically reads the tags of items placed in the bed or cargo hold, and the tracking software can be set to display a list of all tags read. Users can also assign specific tags to a group. If the interrogator picks up all tags within a group, the computer will show that group to be complete, and if any are missing, it will list the missing items. If it reads any tags not associated with that particular vehicle, it will list those (by tag number) as well. Drivers can also manually trigger the reader to scan the tags, which can be done any time the engine is running or the vehicle's accessory system is turned on.

According to Pleet, Ford developed the Tool Link application in response to feedback from owners of its work vehicles, who said they wanted a means for easily tracking the equipment they need to haul on a daily basis. "If someone goes to a job site and forgets an important tool, they'll lose valuable time," Pleet explains, "and in some cases they find that going to a nearby store and replacing the tool actually costs less than traveling to retrieve the tool."



The vehicle's in-dash computer's screen can display a list of all tagged items onboard.

Pleet believes tools will not likely be the only assets tagged. Users may also tag essential items such as notebooks carrying important contracts, and totes filled with nails or other fasteners. In addition, he expects that some individuals will use their vehicles and the Tool Link application for personal use. "On the weekends," he states, "we think professionals will also use the RFID tracking system for keeping track of recreational gear for sports, such as hunting or fishing."

Ford and DeWalt researched a number of auto-ID methods to develop Tool Link. A bar-code system was deemed too labor-intensive because it would have required drivers to manually scan the bar codes on tools, while active tags were considered too costly to make the system marketable. The companies found the passive EPC Gen 2 tags attractive from an ease-of-use and cost angle. Metals tend to deflect UHF signals, generally making passive UHF RFID tags difficult to read in metal-heavy environments, but the Tool Link application exploits the metal comprising the vehicles' bodies.

"The [vehicle frame] becomes a metal container in which the signals bounce around," says Ravi Pappu, cofounder and head of ThingMagic's Advanced Development Group. "That's why RFID works well in this application. The radiation is contained inside the vehicle."

As the signals are reflected off the vehicle frames and other metal surfaces within the truck bed or van, this increases the likelihood that the RFID antennas will capture the tag signals. The body of an

E-Series van forms a metal box around the tags, Pappu says, but even in the open bed of a pickup truck, the floor and both sidewalls assist in ensuring that all tags are read.

Pappu says users can place the tags directly on tools, or on the cases used to carry drills, circular saws and certain other tools. Made with a tough plastic housing to protect them from harsh environments, the tags will be mountable through an adhesive backing, or through an eyelet and zip tie. If tagging the tool itself could interfere with its operation, he notes, tagging the case might be preferable.

Chris Allen, VP of DeWalt's Security Business Group, adds that while newer tools are sold with a plastic carrying case, some older models have metal cases. If a user wants to track these older tools, they would need to place the tag on the outside of the metal case to ensure readability.

According to Pappu, ThingMagic is still working with a number of EPC Gen 2 tag makers to identify the one it will partner with for the Tool Link application. Pleet says Ford is not ready to disclose pricing for Tool Link, though he believes consumers will see a strong return on their investment through the gained productivity and time savings the system will provide. Tool Link will be available on 2009 E- and F-Series trucks and vans starting this fall.