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An Active Role for RFID

The auto industry has embraced active RFID technology. Unlike passive tags, which draw energy from electromagnetic waves sent out by the reader, active tags use battery power to broadcast a signal at intervals set by the user. Active technology is essential for the auto industry because manufacturing facilities and car lots are so large that it would be impractical to use short-range passive technology,

which would require hundreds of readers that cost \$1,000 or more today. And most of the car parts are metal and so are not easy to track with passive tags because the metal reflects the radio waves coming from the reader.

Some active RFID systems use a single reader to pick up a tag's unique serial number. These systems are similar to the systems used for toll collection on highways and are employed mainly to record that an asset has passed a specific point. Real-time locating systems (RTLS) are different. They use at least three readers to capture signals from an active tag and then send the tag's data to a software program that uses triangulation to pinpoint the location of the tag. RTLS technology is used to locate a product or asset in a large area. For instance, it can be used to find a specific container in a distribution yard.

Active systems have some drawbacks. The tags cost \$10 and up, which means they need to be put on reusable containers or recycled in some way. The battery that powers each tag typically needs to be replaced after three to five years, depending on how often the tag sends out a signal.

In the long term, automakers and other industrial manufacturers will likely benefit from combining passive and active systems. As prices for passive tags and readers decline, passive metal-mount tags—those that separate the transponder from the tagged metal object so the metal doesn't interfere with signals from the reader—can be put on individual parts. Passive RFID readers on, say, a parts bin will be able to scan the tags on parts placed inside it. The serial numbers on those passive tags can then be associated with the serial number on an active tag attached to the bin. That would enable manufacturers to locate the parts bin—and each part in it.



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