

German Automakers and Suppliers Track Industry-Wide Supply Chain With RFID

A multiyear project involving several automakers and their suppliers, academia and the German government, is testing RFID to improve supply chain visibility and efficiencies.

By Rhea Wessel

June 4, 2007—A consortium of German automakers, suppliers, software companies and academia is nearing the testing phase of a three-year project supported by the [German government](#) to affix passive RFID tags to metal car parts and track them throughout the entire supply chain.

Called [LAENDmarKS](#) and led by auto parts supplier [Keiper](#), the project's goal is to design a parts-tracking system that can be replicated throughout the automobile industry and used to help avoid recalls. Both the German government and the individual companies are financing the project, which has a budget of about \$7.4 million (5.5 million euros). With most of the research, design and development now complete, LAENDmarKS partners will begin a pilot in the fall to test an RFID-based application that spans the supply chain, from suppliers to manufacturers. The pilot will last until the end of 2007, and the results of the pilot will be analyzed by the project's end. Project participants represent a cross section of the complete car supply chain: second-tier suppliers such as Keiper, which produces metallic seat components and structures; first-tier suppliers such as [Sitech](#), which assembles and upholsters seats; and automakers including [DaimlerChrysler](#) and [Volkswagen](#).

Every week, automakers lose millions when they have to recall vehicles because of faulty parts, according to Bernd Schäfer, who is in charge of international industrial engineering at Keiper and leads the LAENDmarKS project. At the same time, they lose millions more in damage to their images, he says. If manufacturers could track the individual parts within a car, they could recall only those vehicles with faulty parts or halt production when faulty parts are discovered. Currently, if a part is found to be faulty, automakers may have to recall all the vehicles made within a certain timeframe at a certain factory to be sure that all effected parts are exchanged.

"There's nothing existing like [what we are creating] in the automobile industry. Some companies can trace their parts internally, but as soon as the part goes to the next stop in the supply chain, the traceability stops," says LAENDmarKS' Bernd Schäfer. Only a few parts—typically components such as tires, airbags and anti-lock braking systems that directly impact auto and passenger safety—are currently tracked by serial numbers and are linked to specific chassis numbers, he says.

Although LAENDmarKS' primary goal is to develop a track-and-trace solution for recalls, the solution also should offer trading partners in the supply chain additional value, says Schäfer. For example, companies could use the tracking solution to improve the efficiency of and visibility into their manufacturing processes.

In order to design the RFID system, the LAENDmarKS partners had to map out in fine detail the processes used by each member of the supply chain to know at which point it would be best to interrogate a tagged car

part. "This is the logistical reference process for the automotive supply chain. It is possible to design a suitable traceability solution if you know the materials, and the material flows well," says Schäfer. "By understanding the logistical processes precisely, it's possible to identify the synergy potentials of using RFID. For example, by knowing how long certain materials are used at certain positions in the production chain and knowing the exact location of and contents of containers, container management can be improved."

The consortium also wants to use RFID transponders to help prevent the distribution of faulty parts. "If you have a tagged part that is interrogated as it moves along the factory line, you are able to read and write production-relevant data from the tag. When the part arrives at a packing station, the part can be sent back into production if it is faulty or a manager can make sure it doesn't go any further in the parts supply chain," says Schäfer.

Ultimately, the consortium hopes to create a Web-based portal that can be used to track parts and search for information about them, such as their serial numbers and location in the supply chain. IBS is managing this part of the project, integrating middleware from IBM.

RELATED_ARTICLES The project, which started in September 2005 and is expected to end in August 2008, has already passed two important milestones. Together with consortium partner TBN, LAENDmarkS has developed RFID technology that can overcome the RF interference caused by all the metal on both the auto parts and within the automotive production facilities. Schaefer declined to provide details on the technology, since patents are pending.

In working with Ruhr-Universität Bochum's Faculty for Mechanical Engineering and Information Technology, project participants have determined they will use passive RFID tags that operate in the 868 MHz UHF frequency band. Still to be determined is when and where tag reads will occur at each company involved in the supply chain. Readers and reader vendors also have yet to be chosen.

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