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South African Railroad Switches to Passive RFID

BY BETH BACHELDOR

Spoornet, the region's largest rail operator, will equip its fleet of 80,000 freight railcars with UHF tags from TransCore.

Jan 26, 2007 Thousands of rail cars in South Africa will soon be equipped with passive UHF RFID tags, allowing them to be more effectively tracked, maintained and inventoried. Spoornet (<http://www.spoornet.co.za/>), a South African provider of rail freight services and the region's largest rail operator, will equip its fleet of 80,000 freight railcars with RFID tags and install interrogators at various locations within Spoornet's 14,400-mile network of train routes. This network is served by 18,800 miles of track. Spoornet is a division of Transnet (<http://www.transnet.co.za/>), a diversified organization that operates and controls South Africa's major transport infrastructures, and whose sole shareholder is the South African government.

To carry the project, Spoornet is working with TransCore (<http://www.transcore.com/>), a provider of RFID and satellite-communications technology for the transportation industry, and systems integrator ANSYS Integrated Systems (<http://www.ansys.co.za/>). As part of the multimillion-dollar contract, the company will ship 160,000 of its AT5118 tags, which utilize TransCore's proprietary air-interface protocol and operate in the 915 MHz band. Each tag is packaged in a factory-sealed case designed for mounting on railcars, and can be programmed at the factory or in the field by the customer. It has a data capacity of 1088 bits and a read range of 5 to 10 feet in diameter.



Tim
Bickmore,
TransCore

Two tags will be affixed to the sides of each rail car. As the cars pass certain points within the rail network, such as the entrance to a yard or a juncture where tracks merge, fixed interrogators will capture the unique ID numbers on the tags, says Tim Bickmore, TransCore's executive VP of commercial business services. The initial rollout will include 300 interrogators, of which 110 will be installed by March.

"What Spoornet is hoping to do is eliminate bad information about where a car is, or where it is going," Bickmore says. "That bad information can come from mistakes that are made manually when entered into a database, or during the process when railcars are switched onto different tracks."

The tags on the railcars will initially be encoded only with unique ID numbers, but Bickmore says SpoorNet is particularly interested in the read and write capabilities of TransCore's RFID tags. "With this capability, SpoorNet can develop applications to write pertinent information onto the tags," he says. For example, the railway operator could encode the tags with information about what the railcar contains, any hazardous materials that might be on board and other timely information. "SpoorNet has a number of different ideas, and it was very clearly an integral part of their decision [to implement TransCore's tags.]"

The railway operator has been using active RFID tags on some of its fleet, but hasn't always gotten the performance it required. "SpoorNet experimented heavily with a different type of RFID technology, using active tags, and ultimately decided that passive tags were the preferred technology," Bickmore says. The active tag's battery life proved problematic, as did the more amplified, continuous RF signals emitted by the tags. "They were getting a lot of cross reads, and have trouble with interference in the dense rail environment," he explains.

TransCore's RFID technology is already in use at numerous railways throughout the world, the company reports. TransCore has installed more than 6.5 million tags and 20,000 readers throughout the world's rail and intermodal freight industry. The Association of American Railroads (<http://www.aar.org/>) (AAR) adopted TransCore's Amtech RFID technology as the standard for automatic equipment identification. This has resulted in 100 percent of all railcars in interchange service being equipped with TransCore's tags in North America, the company says.

Based in Harrisburg, Pa., and currently a unit of Roper Industries (<http://www.ropersind.com/>), the 66-year-old TransCore targets its offerings at the government, transportation and logistics markets. The firm designs, develops, installs and maintains products and services for access control, toll collection and traffic monitoring and control (see [RFID Drives Highway Traffic Reports \(/articles/view?1243\)](#)). The company's systems have also been deployed to monitor border control in the United States, as well as to automate toll payment and traffic management—primarily across the United States, but in Europe and Asia as well (see [RFID Speeds Border Crossings \(/articles/view?91\)](#)).

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