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Tracking assets in real time

A pilot project utilising the application of RF Controls' 3D Intelligent Tracking and Control System (ITCS) has been installed successfully at two sites in Gauteng and is currently being rolled out to three more across the province. US-based RF Controls has developed ITCS as a standards-based automatic data capture system. It achieves wide area zonal monitoring using innovative "smart antenna" technology.

The pilot involves the installation of just four "smart" antennas to cover an area of some 3 000m², enabling real-time location - height as well as position - within the space of one cubic metre of 500 moving items. The system also tracks the speeds and directions of tag movements.

The data collected about each moving item is then fed back to an intelligent application that analyses the changing reads and prompts the system to take further, appropriate action.

"First there were barcodes; then came RFID - barcodes on the move; now there's ITCS: ultra-smart RF (radio frequency) technology that doesn't only identify a tagged item (assets and inventory); it also tells you exactly where that item is - and where it is moving to - in three dimensions, in real-time," explains Barry Baetu, CEO of Johannesburg-based auto-identification specialist company, Harmonic Solutions.

John Chisum, RF Controls' Lead Field applications engineer, who was in South Africa to oversee the initial implementation of the pilot project and to provide additional training to the ITCS integration team, said, "the utilisation of ITCS in the pilot being implemented by Harmonic breaks new ground for the application of this system."

Multiple applications

According to Baetu, ITCS has potential application in the retail, logistics, EAS (electronic article surveillance) and inventory tracking applications. Items are labelled using widely available, standard, inexpensive, passive or battery-assisted passive UHF RFID tags. These are used to identify, locate and track the tagged items in a three-dimensional space in real-time. The tags can be used on any item from clothing, electronic equipment and pharmaceuticals to cartons or containers (and their contents).

The smart antenna technology at the heart of ITCS can accurately determine the locations of RFID tags to within 30 cm in 3D. This advanced antenna system incorporates complex mathematical algorithms and signal processing techniques, similar to those that have been applied to military target acquisition and tracking systems.

Baetu said ITCS was remarkably cost effective because a single antenna mounted on the ceiling or high on the walls of a warehouse or retail store can do the work of multiple conventional RFID reader systems, thus offering a lower capital cost than conventional portal readers. Furthermore, it delivers high fidelity data that is not provided by conventional RFID reader systems.

"It offers a completely different way of thinking about the utility of passive RFID tags, offering unprecedented ability to identify, locate and track tagged items automatically. This opens the way for a myriad of innovative applications in a wide range of environments - as our pilot project is demonstrating," he

concluded.

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