

To expedite maintenance, each step on every escalator is getting an EPC Gen 2 passive tag.

By Rhea Wessel

May 6, 2009—Radio frequency identification is being employed to track the maintenance of escalators used by passengers of the London Underground subway system. Once the application is completely rolled out, at the end of 2010, some 30,000 tags will be attached to the steps of 200 escalators. If an escalator suddenly ceases running during rush hour, those aboard it can be seriously injured by the crowd. The application helps improve escalator safety via providing a more efficient maintenance process.

Before RFID was implemented, workers had to identify a step by visually reading its ID number prior to performing required annual safety checks or removing an escalator step for repair. To do so, they had to stop an escalator, then read the number written on a metal tag attached to each individual step until turning the belt to the correct step that needed to be inspected or repaired. It could take hours to locate the desired step, and the work was best performed when the escalators were not used heavily by the Underground's 3 million passengers. This raised the cost of maintenance, as the process was lengthy and conducted during off-hours, when workers must be paid more for their time.



The underside of each escalator step is fitted with an Ironside EPC Gen 2 RFID tag from Confidex.

Now, with RFID, maintenance workers utilize a handheld interrogator placed into a cradle attached to the escalator's frame. The cradle is used to ensure that the reader is positioned correctly to interrogate the tags in one escalator rotation, and also allows an engineer to carry on with other tasks. It takes approximately 45 minutes to identify every step on an escalator, depending on its length. In the past, workers spent a five-hour night shift manually identifying escalator steps.

The project to outfit escalator steps with RFID began with a trial that ran from September to November 2008. The trial, held at the St. Paul's tube station, was conducted by project integrator [Core RFID Ltd.](#), based in the U.K. city of Warrington. The solution included Core RFID's Step Tracking System software, [Nordic ID's](#) PL3000 handheld computers with built-in RFID interrogators and [Confidex's](#) Ironside EPC Gen 2 RFID tags, attached to the underside of the steps with acrylic adhesive.

At the London Underground, RFID Keeps Escalators Moving

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Torbjörn Andersson, Confidex's VP of worldwide sales and development, says the company's Ironside tags were chosen because of their durability and ability to withstand an escalator's rugged, industrial and metallic environment. The tags are impact-resistant and built so that the inlays are unable to move around within their casing. Each tag stores specific information regarding the corresponding step, including the name of the manufacturer, the part number, the step type, the year of manufacture, the step ID number and the tag's unique ID number.

Confidex is presently working with escalator manufacturers to enable the tag to be riveted onto the escalator steps when new steps are ordered. To date, the system has been implemented on the steps of two escalators at the Moorgate station, as well as on one escalator at the Victoria station. Two additional escalators at the Victoria station will soon be outfitted as well.

The company that maintains the Underground's escalator declined to be interviewed or identified for this article. According to Andersson, the system's main benefits are improved passenger safety and a more efficient maintenance process. Once all of the steps are tagged, the maintenance company will be able to track which are removed and re-installed elsewhere, and which are out of service more often than others. Such asset-management information can help the firm save time and money.

The maintenance company also declined to reveal how much money it invested in the system, or the return on investment it expects to achieve.