

# New RFID Gate Technology Aims to Improve Read Rates

NEC wants to make a dent in the typical 10 to 20 percent error rate that occurs when scanning multiple RFID-tagged packages simultaneously.

By Beth Bacheldor

Sept. 29, 2006—Manufacturers, distributors and others looking to improve the accuracy of RFID readers situated at doors and other choke points within their facilities now have another option for improving read rates: RFID gates from [NEC](#) that leverage radio-wave reflection techniques.

The new gate system is designed for use at various points in manufacturing and supply-chain lines, such as inspection and inventory-control stations, and can read multiple UHF RFID tags simultaneously. Much like conventional RFID-enabled gates, the NEC system includes an RFID reader-writer, antennas, a controller and a gate. NEC, however, has installed the RFID antennas at the upper part of the gate, instead of on the sides. Rather than shoot radio waves directly at the RFID tags on goods moving through the gate, the antennas shoot radio waves to specially tuned reflector plates installed on the gate system. The plates reflect the waves at right angles to goods passing through the gate in order to scan the RFID tags, says Hiroki Murayama, senior manager of RFID systems with NEC's Control Systems Division.

Conventional gate systems offer a 10 to 20 percent error rate when multiple RFID-tagged packages are scanned, particularly if the contents of the packages are liquid or metal, Murayama says. Getting an accurate read on all the tags, particularly those located on the bottom tiers of palletized goods, can be difficult if the tags can't draw enough power from the radio waves—which often happens with conventional gate systems, he adds. The reflector plates are designed to shoot the radio waves to all RFID tags on a given pallet.

The company has already tested the new gate system in two of its own plants in Japan, including its [Personal Products Ltd.](#) factory in Yonezawa, where NEC assembles build-to-order PCs. NEC is using RFID at that factory to eliminate the need for employees to scan as many as 100,000 bar codes each day. Productivity rates have improved by as much as 10 percent since NEC began using RFID, the company claims. In April, the factory began deploying EPC Gen 2 RFID interrogators based on [Impinj](#)'s Speedway design (see [NEC to Sell Gen 2 Readers in Japan](#)). NEC plans to test the new gate system further in October at a third facility, its RFID Innovation Center in Singapore. The new gate system has been tested with C1G2 single dipole tags (built with an antenna made of two straight electrical conductors which, in an RFID transponder, are connected to a microchip), and dual dipole tags, a design that's meant to reduce the tag's orientation sensitivity greatly.

NEC's gate system, which has not yet been formally named, is expected to ship in early 2007. Pricing is dependent upon system configuration. NEC will work with each company to determine the configuration that best meets its operational and environmental needs. NEC also plans to unveil a similar gate system for use on conveyor belts.