

An RFID-based payment system is helping streamline the car-wash process, and increase customer loyalty.

By Mary Catherine O'Connor

April 25, 2007—American drivers love to pamper their cars, but they don't like waiting in line at the car wash. [Innovative Control Systems](#), a company that develops car-care technologies, has introduced an RFID-based automatic payment system designed to help streamline drivers' visits to the car wash and improve customer satisfaction. This system can also be used as part of a customer-loyalty program.

ICS partnered with [RCD Technology](#), an RFID tag manufacturing startup based in Quakertown, Pa., to design an RFID tag able to fit ICS's requirements. The tag had to be low-cost, highly reliable and mountable on the inside of a car windshield. It also had to have a small profile so it would not create a visual hindrance for a driver. It also needed to be tamper-proof to prohibit a thief from removing it from the car to which it was issued.

"Initially, the tag size was about the size of a credit card," says Mike Ruiz, ICS' chief information officer. But RCD was able to reduce the size of the tag down to its current 7 by 1.2 centimeters—small enough to fit on the part of a car's windshield that the driver's rear-view mirror blocks from view. If someone removes the tag after it has been placed on a windshield, its strong adhesive forces the antenna to detach from the chip, making the tag unreadable. Printed on the tag is the ICS logo and a unique ID number, along with a bar-code version of the ID number, also encoded to the tag. This enables car-wash attendants two additional means of collecting the tag ID, should their RFID readers go down for maintenance or if there is some other reason they can't be read.

The ICS tags are compliant with the UHF EPC Gen 2 and ISO 18000-6C air-interface protocols. They contain the Higgs Gen 2 chip made by [Alien Technology](#), as well as RCD antennas. RCD employs a proprietary method for creating its tag antennas, which involves the use of conductive inks and electroplating. The company says this provides a low-cost platform for customizing its antenna designs. It specializes in custom RFID applications such as the one developed by ICS.

ICS is offering the RFID system as a value-added service to its customers in the car-wash industry as part of the ICS Auto-Sentry touch-screen payment terminal. This terminal can process cash payments (it dispenses change), as well as payments made with magnetic-strip credit or debit cards. As such, it can be deployed at unattended car-wash stations, where customers drive up to payment kiosks, select the type of wash they want, pay and follow instructions to enter the automated car-wash tunnel.

ICS' RFID platform includes the Alien 9800 reader, installed at the entrance of a car-wash tunnel, near the payment kiosk. ICS has also developed a software interface for the Alien 9800. The interface filters duplicate tag reads and sends the tag ID pulled from the car closest to the payment kiosk to the Auto-Sentry software. Thus, by the time the driver stops at the kiosk and rolls down a window to operate the payment terminal, the touch-screen displays a greeting for the account holder. Ruiz says that in

early tests of the RFID tags and readers in a car-wash setting, the readers picked up tags from more than 20 feet away, which was too great a range.

"We want to read only the tag attached to the windshield of the car that is next up in line," he explains. "We don't want to read tags off cars that are just driving by, close to the car wash." To reduce the range, ICS has had to experiment with attenuating the interrogator's power levels and settings.

The car-wash proprietor can choose to deploy the RFID system as a customer-loyalty program, as an auto-pay program or both. The driver can then choose to sign up for one or both of the offerings.

As a customer-loyalty tool, the tag would call up special offers, such as a discount on a deluxe wash that includes extra services not provided in a basic wash. The driver can purchase a special offer by selecting it from the touch-screen, or simply to choose a particular type of wash saved on a customer profile linked to the tag number. If the RFID system is used for automatic payment, then when applying for the tag, the driver chooses a credit or debit card account to which the car-washing fees should be charged.

According to Ruiz, two of ICS's customers are currently running a small pilot of the RFID system. One customer is testing it for both payments and customer-loyalty offerings, while the other is experimenting only with customer loyalty. "So far," Ruiz says, "they both say that the system is working as they'd hoped."