

Passive UHF tags mounted on trucks help LIPOR quickly identify the source and quantity of the trash collected from more than 1 million residents.

By Mary Catherine O'Connor

Mar. 10, 2009—A waste management agency in Portugal has begun employing passive ultrahigh-frequency (UHF) RFID tags in order to identify garbage trucks entering and exiting its disposal center, as well as to make a number of business processes more accurate and efficient within the facility.

The agency, known as [LIPOR](#), provides trash collection services to more than 1 million residents in Oporto, Portugal's largest city, and some of its surrounding municipalities. To help it develop a means of improving operations at its garbage disposal facility, LIPOR hired [CreativeSystems](#), a value-added reseller of [Alien Technology's](#) RFID tags and interrogators, and a systems integrator that has managed RFID deployments in a number of industries.

Previously, in order to gain access to secured gates at the entrance and exit of LIPOR's main disposal center, truck drivers utilized magnetic-stripe cards to identify themselves. This required stopping at a magnetic-stripe reader mounted at one of the gates, then manually swiping the card. Once inside, each driver proceeded to a weigh station, where the vehicle was weighed before and after the load was dumped. Then, based on the load's weight, LIPOR generated an invoice for the municipality from which the garbage was collected.

There were a number of problems with this system, according to Stephen Crocker, Alien Technology's sales and channels director for Europe, the Middle East and Africa (EMEA) and India. For various reasons, such as wet weather, the mag-stripe cards were not always immediately readable when the drivers swiped them through the reader. This caused delays at the gates, which sometimes led to a long lineup of trucks, particularly during the disposal site's busy periods. Additionally, after entering the facility, each driver was directed to a specific weigh and dump station, based on the specific municipality the truck represented. Nonetheless, drivers—whether through an error or in an effort to defraud the system—did not always proceed to the correct station, thereby resulting in the wrong municipality being charged for the garbage.

Under the new system, an Alien M-tag, compliant with the EPC Gen 2 standard, is encased in a rugged housing and mounted to the windshield of each of the 400 trucks that use the facility, via an adhesive backing. An Alien ALR-8800 passive UHF reader is mounted near the gate at the facility's entrance, with another interrogator mounted near the site's exit gate. When a truck approaches, the reader collects the tag ID and forwards it to software linked to gate controllers. If the tag ID matches an ID in a database of vehicles authorized to use the facility—maintained and updated in the software—the gate opens.

Once inside the facility, the driver proceeds to a dump and weigh station, where another mounted Alien

reader collects the tag ID and transmits that information to the main software, linked to the scale. The weight of the load is determined after the truck dumps the garbage and returns to the scale, after which the software automatically generates an invoice, based on the load's weight, for the municipality to which the truck's tag ID is associated.

Historically, active RFID tags, with their longer read ranges, have been the preferred RFID technology for identifying and tracking vehicles within large, open facilities such as LIPOR's disposal center (see [RFID Helps Take Out the Trash](#)). CreativeSystems, however, found that passive tag technology met the agency's needs, since the trucks did not need to be tracked in real time as they moved through the facility, but only at particular areas on site where they would be certain to pass within the read range of fixed-position interrogators. Aside from being significantly less expensive than active tags, passive tags also require less maintenance, since they contain no batteries that would require replacement upon approaching the end of their lifespan.

In fact, Crocker notes, the use of passive tags for vehicle tracking is gaining real momentum. LIPOR, he says, is just one of roughly 20 end users in the EMEA marketplace that has begun using Alien's passive RFID tags for vehicle identification applications.