

Greek RFID Pilot Collects Garbage

The city of Aspropyrgos has been evaluating a system that uses passive EPC tags to track refuse bins and manage the collection process.

By Mary Catherine O'Connor

Jan. 15, 2007—For the people of Aspropyrgos, a fast-growing suburb of Athens, Greece, garbage collection is a big deal. Beginning in the 1960s, the town grew from an agricultural community of 2,000 residents to a major industrial city with a population of 27,500. As with any urban transformation, that growth put stresses on the basic services in Aspropyrgos, including garbage collection.

Complaints of missed or infrequent collections, largely made by business owners, led the municipality to seek a means of better controlling its garbage-collection services. The city wanted to increase its ability to track the work completed by garbage collectors, and to do so in real time. Aspropyrgos has now completed a three-month pilot project using RFID to attain that visibility.

The RFID system was designed and deployed for the Aspropyrgos municipality by local RFID systems integrator CAT Hellas. For the pilot, 15 of the 2,500 city-supplied garbage bins used by residents and businesses were each tagged with an RFID tag mounted near the base of the bin. The tags, model A918, were made by Italian RFID hardware provider CAEN RFID. An RFID reader—an A949EU model also from CAEN RFID—was then mounted on one of the city's 15 garbage-collection trucks.

The reader's antenna was mounted above the opening at the back end of the truck, into which the vehicle's arms lifted the tagged bins. When any of the tagged bins were emptied into the truck, the antenna read a unique ID encoded to the bin's tag. The tag comes in a rugged housing, transmits at 867 MHz and follows the ISO 18000-6B air-interface protocol, which matches the EPCglobal UHF Gen 2 protocol.

Though the interrogator could read the tags from a distance of nearly 5.5 meters, the antenna used for the pilot was detuned so that the tag's read range would not exceed 1 meter. This was done to ensure that the reader would sense the tag on a bin only as it was being emptied, rather than also interrogating tags mounted on nearby bins. A metal plate was used to shield the reader antenna from RF interference presented by the metal of the garbage truck's body.

The tag data was collected by the reader and sent, via a Bluetooth connection, to a Qtek S200 PDA mobile phone inside the truck. This phone used a GPRS communications link to upload the tag data to a server operated by the municipality, along with a time stamp for when each tag was read. The server utilized software written by CAT Hellas using Microsoft's .Net platform and the Delphi programming language. This software processed the tag data, comparing each tag ID to a database and generating a list of addresses where bins had been emptied—and when.

“The municipality can use this data to optimize route and vehicle schedules,” says Mikos Pesmatzoglou, CEO of CAT Hellas, because the system shows how long it takes for a given truck to complete a specific route. In

addition, he says, the system can also provide the municipality a means of tracking the productivity of its garbage collectors.

By the end of February, Pesmatzoglou says he expects the municipality to provide CAT Hellas with its decision on whether to equip all trucks and garbage bins with RFID. In a statement issued by CAEN RFID, Aspropyrgos' mayor, George Liakos, said the city was happy with the information the pilot application had provided, and that it could use that data to improve its garbage-collection services overall. Pesmatzoglou would not reveal the cost of the pilot program or the estimated cost of a permanent deployment, saying only that the RFID equipment deployed for the pilot is still in use today.

RELATED_ARTICLES Having designed the Aspropyrgos RFID deployment and developed the software used to capture and process the tag data, CAT Hellas is now interested in deploying the same system for other Greek municipalities. According to Pesmatzoglou, the company is talking to several cities about potential pilot tests.

Not all those cities, however, are interested in using a GPRS link and collecting the productivity data in real time. For some, he explains, the tag data would be downloaded from the PDAs once the trucks return to their home bases after completing their routes.

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