

Turnkey Self-Service Store Would Employ RFID Instead of People

The prefabricated transportable structure, developed by a European startup, features RFID interrogators at the point of sale and exit door, enabling a retailer to operate without staff, and to quickly open up new branches to meet demand.

By Claire Swedberg

April 8, 2008—Food retail research and consulting company [Food Information Service Europe](#) (FIS Europe) is in discussion with retailers in the Netherlands and Belgium to deploy prefabricated automated stores that sell high-end food or other items to customers. The prefab stores incorporate self-locking doors, RFID technology and cameras, so that no staff is required.

The concept, known as Food Store 24, was inspired by a similar system employed at the Laxomat self-service convenience stores operated by [Laxbutiken](#), a Swedish restaurant operator specializing in salmon. Laxbutiken operates two Laxomat stores—one in the city of Heberg, the other in Ljungskile—where customers can buy salmon, salads and other packaged food, as well as bottled drinks. The store is entirely self-service and requires no staff to transact purchases, thanks to RFID tags on the items and RFID interrogators at the point-of-sale terminals.

In the case of Food Store 24, German systems integrator [IAL Automation und Logistik](#) is providing RFID readers, tags and middleware that could be used to create an automated store enabling a business to stay open 24 hours a day without a night staff. Most stores in Europe are typically open from 8 a.m. to 8 p.m. Operating later than that requires extra staff, and even a small store generally necessitates two staff members be on the premises during late hours for security purposes.

The Food Store 24 system, however, could allow a store to operate with no staff present. With this trailer-sized prefabricated stand-alone structure, transportable via tractor trailer, customers could enter anytime of the day or night, select purchases and complete transactions without an employee's assistance. The turnkey solution includes the prefabricated store, says Dieter Niemiets, president of IAL, though some retailers may opt to furnish their own store location and purchase only the RFID solution.

Since the turnkey structure is relatively easy to transport, Niemiets says, it enables retailers and restaurants to take their products and services to the public. He points out that the structure could be placed in crowded parking areas near theaters, concerts or other heavy traffic areas, as well as at ski resorts in the winter, beach areas in the summer, and even residential areas where there is demand. "If the store found out the spot is not very popular," he notes, "they could move it to another location."

The store works like this, according to Sylvia Pfaff, director of FIS Europe: To enter, a customer inserts a credit or debit card in a slot by the front door and inputs the card's four-digit PIN number. If the PIN is accepted, the door unlocks and allows the individual entrance to a lobby area. The card information is then stored in a back-end system, where it can be accessed remotely by the store's owner through a browser link.

After the lobby's exterior door closes, a second door unlocks, allowing entrance to the store area itself.

At the doorway, the customer can pick up a shopping bag. Inside the store, every item would be tagged with a high-frequency (HF) 13.56 MHz RFID tag that complies with either the ISO 18000-3, ISO 14443 or ISO 15693 standard and has a very short read range. IAL has not yet decided on a specific tag supplier, Niemietz says, noting, "We have been working with several hardware vendors."

The customer fills the shopping bag, then takes it to the checkout area, placing the entire bag on the counter within close range of the sales terminal's RFID interrogator. The reader captures all the items' tag ID numbers, and IAL software enables the linkage of those IDs with product and pricing data in the store's back-end system. The terminal's touch screen then displays the total cost for all goods being purchased. If the consumer decides not to buy a particular item, that person can cancel the purchase, remove the item from the bag and place the bag back on the counter.

Once ready to pay, the customer inserts the debit or credit card into the terminal and approves payment. The unique ID numbers on the item tags are then updated as sold in the back-end system, and the door unlocks. The customer walks through the exit door, where another RFID interrogator is stationed. The reader captures the ID numbers of all tagged items passing through the door, and compares the IDs with those purchased.

If the customer is removing an item that has not been purchased, the system displays an alert indicating which items have not yet been paid for. Should the patron continue out the door without paying, the store will have a record as to that person's identity and what was removed. In addition, the store would be equipped with surveillance cameras, so videos could be reviewed in the case of sales discrepancies.

RELATED_ARTICLES If the customer chooses not to buy anything, he uses his credit or debit card once more to unlock the door before leaving. The doors are locked at all times, both to those inside and those outside, though Pfaff says emergency doors would be made available.

The company is presently in discussion with food retailers, Pfaff says, and the mobile store could eventually be used to sell other small high-priced items as well, such as CDs, books or DVDs. IAL and FIS Europe are initially marketing the system in northern Europe, where credit card payments are more common than in southern Europe. The system does not accept cash payments. Ultimately, Niemietz says he can foresee selling the system globally.

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