

**The company's IT subsidiary, Matiq, is teaming with IBM to deploy a system that uses RFID to track meat from the slaughterhouse to the store.**

By Claire Swedberg

July 22, 2008—Norway's largest food supplier, [Nortura](#), is launching a system that will employ RFID to track meat from its butchering and processing plant to the store, with a long-term goal of tracing chicken, beef, lamb and pork from an animal's birth to the consumer's plate. The expansive plan is beginning with phase one of a pilot involving Nortura's information technology subsidiary, [Matiq](#). [IBM](#) is providing software and integration services for the project.

Several years ago, Matiq began researching RFID technology options for tracking meat as it moves from the processing plant to the store. More recently, it joined with IBM to plan Nortura's first pilot, which will launch this fall at two animal harvesting facilities, one distribution center and one supermarket.



*Matiq CEO Are Bergquist, with pig.*

Interest in animal tracking is not new to the Norwegian food industry. The nation's government has set a 2010 deadline for standards and policy regarding food traceability as part of its e-Traceability (eSpring) program, intended to increase food safety through visibility from the farm to the store.

Nortura is Norway's largest food supplier, providing 54 percent of the consumer meat products sold in the country and 73 percent of the animals butchered. Because the company accounts for a majority of the market, it sells a percentage of its meat to competitors, as required by federal regulations, so meat often passes from a farm to Nortura, then on to another meat-processing firm before arriving at a store. This makes the food that much more difficult to trace.

With such complexity in the meat supply chain, says Are Bergquist, CEO of Matiq, Nortura has been interested in gaining increased visibility into where its meat comes from and when it is processed, as well as the animal's age and what it has eaten. "For quite some time," he says, "we've noted an increased demand for a [system] in which to find out where food is coming from."

This demand comes not just from the government, Bergquist notes, but also from consumers and retailers, who would appreciate having greater knowledge about meat sold in stores. With an RFID tracing system, he explains, retailers could better track their inventory, assure customers that meat is fresh and also provide them with details about the meat, such as where it came from. Still, Bergquist says, there has been little effort from much of the meat industry to address this problem—in large part because the supply chain is so complex.

"It's a very complicated problem [requiring the participation of multiple parties, including farmers, processors, distributors and retailers]," Bergquist says. "But we have been discussing it with IBM for some time, and would like to be able to trace an animal from birth to the plate." Because Nortura is the nation's largest meat provider and is involved in such a high percentage of Norway's meat production, he explains, "Matiq has quite a bit of knowledge of various steps of the operation and the complexity of operations. That puts us in a good position to be addressing it."

IBM is providing Matiq with software, in addition to consulting and integration services to help the company develop a system in which Nortura can share data with supply chain members. The software, based on [EPCglobal's](#) Electronic Product Code Information Services (EPCIS) standard, will enable those members to share information related to the tags, and to the items to which they are attached.

Norwegian meat initially undergoes a variety of processes before reaching a retailer. The animals are raised in Norway on hundreds of farms, then transported to facilities such as Nortura's meat-production factories to be butchered. The meat is cut into large pieces, then smaller ones, and is processed, packaged and shipped to a variety of distribution centers. It is then sent to one of thousands of Norwegian food stores.

For phase one of the RFID pilot, Nortura is applying adhesive passive EPC Gen 2 UHF RFID tags to plastic totes at its Tonsberg and Forus plants. When sheep, cattle or pigs are butchered, the meat will

be placed in plastic totes. The unique Electronic Product Code (EPC) number encoded to a tote's tag will then be read by an [Impinj](#) or [Intermec](#) fixed interrogator as the container travels along a conveyor belt, and be linked to data input by factory employees regarding the meat that was just cut. That information includes the farm of origin, the type of meat (pork, lamb or beef) and the animal's age and health records. Large slabs of meat, however, will not be included in this phase of the pilot, as they will not fit in the totes, which measure 16 by 24 by 7 inches.

When a tote is moved to the next stage—which consists generally of slicing the meat into smaller pieces and processing it (such as grinding it into sausage and hamburger, or curing it to become ham)—it will pass another RFID reader, which will capture the tote's ID number once more, recording the time, date and location. The tote will then pass another interrogator once the meat is packaged and delivered in that tote to the distribution center. If, at any time during the process, the meat is transferred to another tote, that data will be input to the system as well.

Throughout the process, Bergquist says, the tote will undergo several washing cycles and pass through very cold environments, so the tag needs to be very robust. IBM and Matiq have tried several tags in search of one that will not be damaged by the rigors of meat processing and washing, but the companies have yet to determine which tag will be used in the pilot. Eventually, Bergquist notes, the company may seek to have the tags embedded in the totes.

As the tote leaves the processing facility for shipment to the distribution center, it will pass an RFID reader, which will record its departure from the plant. Upon its arrival at the distribution center, an interrogator at the door will read the tag as the tote is unloaded. When shipped to the participating store, located in Tonsberg, the tote will again pass a reader deployed at the DC's dock doors, as well as another interrogator located at the back of the supermarket during receiving.

According to Bergquist, no additional RFID readers will be installed within the store. The totes will be taken directly to the sales floor, where the packed meat will be stored in refrigeration units until sold, and the empty totes will be returned to the plant. Information will be stored at Matiq's data center using IBM's WebSphere RFID Information Center software. Anyone utilizing the EPCIS system who is granted access to the system could then view data about a particular shipment, and trace back a specific tote and the items in it through the supply chain.

"The aim of the project is to get full traceability throughout the value chain," says Espen Braathe, an executive with [IBM's sensors and actuators division](#). "To achieve that, we need to track totes all the way [from the plant to the store]." Although no decision has yet been made regarding when the pilot will end, Braathe says it will likely expand as IBM and Matiq continue work involving the use of tagged totes .

Eventually, Bergquist says, Matiq hopes to have animals tagged at birth, though tagging chickens is unlikely to be mandated by the Norwegian government, and thus is less likely to occur among chicken farmers. The government is, however, encouraging the tagging of chickens as well as other animals, emphasizing the efficiency it would provide farmers.

For Nortura, Bergquist notes, the information provided by this solution will make it easier to track stock levels and avoid out-of-stock occurrences, and to facilitate product recalls in the event that a bad batch of meat is discovered. What's more, he says, it will also help manufacturers and supermarkets to track consumer meat-buying patterns.