

With temperature sensors linked to battery-powered RFID tags, the system can record not only an animal's location, but also its health.

By Claire Swedberg

Aug. 24, 2006—Agriculture technology company [TekVet](#) has begun taking orders for its new active RFID cattle-tracking system. The TekVet system includes health monitoring and a Web site that displays details about an individual animal's history and health condition.

The system utilizes active 418 MHz RFID tags, sensors that monitor an animal's internal temperature and transceivers to transmit each tag's unique serial number, as well as the animal's temperature, to an Internet server hosted by [IBM](#). There, the unique serial number of that tag is linked with the animal and its health record.



Eric Gabrielson

What makes this RFID cattle-tracking system unique, says TekVet president and chairman Tali J. Haleua, is that it uses an active RFID tag, as opposed to a passive one. Furthermore, it comes with a temperature sensor so it can alert parties when an animal becomes sick, and it provides a Web site where interested parties can easily track the health and movement of an animal or herd.

The RFID tags and sensors are manufactured by [Nationwide Electronics](#), based in Palmetto Fla. A tag is attached to an animal's ear, and the tag's temperature sensor is inserted into the ear canal. Once an hour, the tag transmits its unique ID number and the animal's temperature. That transmission is captured by transceivers known as TekVet SmartReceivers, also manufactured by Nationwide Electronics.

The SmartReceivers can be attached to poles or walls of buildings on a cattle producer's lot, offering a read range averaging 300 to 500 feet. The devices use a 900 MHz private satellite communication network to transmit tag and sensor data to an IBM-hosted data center, where information on millions of cattle worldwide can be displayed online. The Web site containing this data is accessible by producers, investors and food-safety regulators, enabling them to determine the lot where an animal is located, based on which transceiver is receiving the tag data.

The Web site can store and access an animal's health records, such as which inoculations it has received, its temperature history and whether it has received antibiotics and why. It can also determine which cattle have been in contact with others, based on the lots they have passed through and the dates on which this happened. Some of this health information, such as inoculations and other treatment, is added to the animal's data record manually. Other data, such the animal's temperature record, is maintained automatically.

TekVet-IBM Cattle Tracker Uses Active RFID Tags, Satellite Communication

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IBM is providing a hosting service capable of storing the data on potentially millions of cattle. "IBM has been making a point of expanding our solution set for RFID," says Eric Gabrielson, director of [IBM's RFID solutions division](#). The company will provide support for the TekVet SmartManagement system's servers, maintenance, storage, help desk, security management and security support, Gabrielson says. "What IBM can bring is world-class technological capabilities, an ability to scale that to providing data for millions of cattle at a time, and an expertise in emerging technologies."

TekVet began conducting research and development on the RFID system in 2003, Haleua says, and is now taking orders from cattle producers. He says producers have already placed orders to tag millions of animals, and that TekVet is working to streamline the manufacturing process to provide the hardware needed for those customers.

An active RFID tag is preferable to a passive one, Haleua says, because it can transmit data about cattle whether or not it passes near an RFID interrogator. An animal, he says, is "a unique product when it comes to track and trace. This is a product with a mind of its own, and it wanders in large areas."

While many cattle using passive RFID tags are tracked when they arrive at feeding or drinking areas, sick animals often do not approach these areas and, therefore, can potentially be overlooked. With the temperature sensor, however, producers receive immediate information about a sick animal and can take the necessary measures. While mad cow disease does not cause an elevated temperature, Haleua notes, many other infectious disease do.