

AgVantage, a plastics manufacturing company in Illinois, is creating an RFID-enabled feeder designed to help hog farmers more efficiently care for their livestock.

By Beth Bacheldor

Feb. 1, 2007—AgVantage, a plastics manufacturer located in Rockford, Ill., is creating an RFID-enabled hog feeder designed to help farmers more efficiently care for pigs. The feeder, composed of a biocomposite material, will include an active RFID tag embedded in its side, as well as sensors designed to measure weight.

RFID readers installed in hog houses will collect the unique ID numbers stored on the feeders' tags, as well as sensor data indicating how much feed is left in a feeder, according to the feeder's weight. Hog houses keep animals in separate pens, each with its own feeder, says Ron Hagemann, a principal at AgVantage and also VP of technology at New Composite Partners, a newly created AgVantage spin-off that will market and sell the RFID feeders. The biocomposite used to make the hog feeders is being developed in conjunction with Richard LaRock, a chemistry professor at [Iowa State University](#).

This biocomposite material is critical to the success of RFID in the hog houses, according to Hagemann. Typically, hog feeders are made of metal, which can interfere with RF signals, and swapping the metal for plastic is not a viable solution either since plastic is not strong enough by itself. "These are 500- to 1000-pound animals that really bang on the feeders," says Hagemann. "If we put a plastic feeder in the hog house, the hogs would destroy it."

Biocomposites are formed by embedding some type of natural fiber—usually derived from plants or cellulose—into a natural plastic resin, such as one made from corn oil. This is done, says Hagemann, to reinforce it. "This is the first biocomposite feeder on the market. Biocomposites are often used in the aerospace industry."

Another advantage to the biocomposite material is its cost. Derived from corn-based material, the biocomposite is significantly cheaper than petrochemicals used in other plastics. "Also," Hagemann points out, "the biocomposite material is a renewable source, so the bottom line is this can replace higher-cost plastic materials. And it is a green product."

Since the hog-feeder system is still in the design phase, the developers have not yet determined which specific radio frequencies and air-interface protocols the RFID feeders will use. However, the system, as envisioned, will include a database running on a computer situated in each hog house. The interrogators will communicate with the computer via Wi-Fi, uploading the data they collect from the feeders.

The computer will incorporate a Web-based portal, accessible either via a satellite or Internet connection. Thus, a farmer will be able to check the data from his office. Such information can help farmers determine how much feed is optimal, without actually having to manually check feed levels on a

continual basis. "You don't want to put too much feed in a hog feeder, because it costs money if there is wasted feed," Hagemann explains, "but you also don't want to put too little feed in the feeder."

Another possibility would be to embed temperature sensors that can monitor how hot or cold the hog house is throughout the day. Farmers can then correlate temperatures with feed levels. "Maybe it's too hot in the hog house, and the hogs aren't eating enough because of that," Hagemann notes.

In addition, the interrogators may also collect the unique IDs of any passive RFID tags attached to the hogs, which Hagemann says more and more hog farmers are using. The computer's database can associate a hog's ID number with data collected from the feeder in that hog's pen, allowing the farmer to correlate feedings with a specific hog.

Starting in April, New Composite Partners expects to test the feeder at an Illinois farmer, though Hagemann declines to identify the farmer because details are still being worked out. The farmer is building a new hog house, and will install 200 RFID-enabled biocomposite feeders to test them.

If all goes well, a commercial version of the hog feeder will be available later this year, says Andy Axel, CEO of New Composite Partners. The company also plans to explore other products utilizing the biocomposite and RFID combination, including pallets.