

# Deere Tour Showcases Both High And Low-Tech Innovations

By Jim Ruen, Contributing Editor

When FARM SHOW was invited to join a group of editors and broadcasters for a tour of Deere's major research center in Waterloo, Iowa, I jumped at the chance. What a place! It combines high security with high technology. No cameras were allowed and everyone had to have a badge on at all times.

The highlight was the labs where new ideas and new designs are tested, modified and tested again. Computerized hydraulic arms imitate actual field conditions, shaking equipment for hours to simulate years in the field.

The most exciting part of the labs for me was the virtual reality room. Once a piece of equipment has been designed on the computer, it's projected on one of three panels against a wall. Flashing lights indicated how wind would pass over and around the equipment.

Then the magic began. The two end panels were folded in to form a three-sided box. We all donned 3-D glasses, and suddenly a tractor was standing before us. The engineer in charge gave me a chance to walk toward the tractor. The tractor would move, giving me different views. Then he told me to walk

into the hood. I knew it was just a computer-generated image, but it was still hard to do. When I forced myself to do it, the computer eliminated the hood, and I found myself staring at the top of the engine. It was amazing how the mind didn't want to believe that the image wasn't real.

The next day we did a ride and drive. We saw sprayers and tractors not only guide themselves down the road, but also turn at the headlands while the operator watched. There was iGuide to keep equipment from slipping down hill on contour rows and iTec for assisted steering and iTec pro for even fancier steering at row ends and automating implement controls and more.

It seemed like everywhere we turned the new technology was being turned up a notch. Then suddenly there it was - Deere's new, 74 hp/64 pto hp, 5403 tractor. Manufactured in India to Deere specifications, it has no GPS, no headland management, no assisted steering. It didn't even have a power shift.

The 5403 has a basic collar shift transmission, 9 forward and three reverse speeds.

The open platform is the fourth in a series



Deere's new no-frills model 5403 tractor is economically priced at \$22,188.

of lower cost, basic tractors stretching from 50 to 74 hp. This one is the biggest of the group and carries the highest price of \$22,188.

"This design has been a tremendous success for us," says Barry Nelson, manager, public relations.

"It's just an economically priced, very ba-

sic barnyard tractor for chores around the farm."

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Fuel-processing system is based on technology developed by the military 60 years ago. The unit shown above produces 16 gal. of fuel per hour and is small enough to fit in the trunk of a car.



This is the larger system which processes 200 gal. of fuel every 12 to 15 min. In both systems, a mix of oil and diesel fuel passes through a set of filters and stainless steel plates.

## Simple System Turns "Waste" Oil Into Diesel Fuel

Josh Hall and Mark Jordan have taken 1940's military technology and updated it to produce their own low-cost diesel fuel from waste engine oil and various kinds of crop oils.

"The military developed a system of pumps and filters to reclaim used oil during World War II," explains Hall. "We took their original design and reworked it to make a do-it-yourself fuel system."

The system relies on a series of stainless steel filters and a polymer bead filtration unit. Waste oil is simply pumped into one end and flows out the other end, ready to burn.

The farm-sized unit processes a minimum of 16 gal. per hour and is priced at \$750 plus shipping. With its 16 gal. mixing tank, filtration system and 12-volt pump, it is small enough to be carried in the trunk of a car to process fuel as needed.

A larger unit will process up to 200 gal. of fuel every 12-15 min. and costs \$3,000. It consists of a steel mixing tank, stainless steel filters and a collection tank.

A 50-50 mix of waste or veggie oil and diesel fuel is added to the mixing tank. Once the mixture has settled for 10 seconds, valves are opened, and the mix goes through the first one micron stainless steel filter. Then the mix goes through a pump and a 10-micron paper

fuel filter. Magnets on the replaceable paper filter collect metal fragments. The mix then goes through another stainless steel one-micron filter.

The final filter is a container filled with polymer beads. While the beads start out the size of BBs, they swell as they absorb antifreeze, water, metal particles and dirt.

As that container fills, a second pump pulls the filtered fuel out through a final 10-micron paper filter to a vehicle or storage fuel tanks.

"We periodically flush the system out with diesel fuel to clean out the residue from the beads," says Hall. "The stainless steel filters can be pulled out and washed as well."

"We recommend starting with the 50/50 mix of waste or veggie oil with diesel fuel," says Hall. "If you are happy with it, try a 70-30 mix and then 80/20. We run our vehicles on an 80/20 mix."

Hall suggests pre-treating waste oil, using a collection container for waste oil with a layer of rock salt across the bottom. The salt causes any water present to settle out of the oil.

"With a 55-gal. container, use 1 to 2 in. of rock salt or softener salt on the bottom," says Hall. "It will pull a lot of residue to the bot-

tom, including 99.7 percent of the glycerin in waste vegetable oil. It will layer water, glycerin and antifreeze under the oil, drawing them to the bottom and letting you pull clean oil off the top."

Hall and Jordan have begun setting up dealers in several states and are looking for more. They offer a 30-day money back guarantee on their systems and are confident the filtered fuel will work in any diesel engine.

"We have tested it on every kind of vehicle we can get our hands on, including a 1981 Mercedes, a 1992 Ford F250, a 2006 Dodge

2500 and many more.

"We already have about 650 of the larger units out and more than 1,000 of the smaller systems. People often buy a smaller unit to try and then come back and buy the bigger one."

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