

Chicken Litter Diesel Fuel

A team of West Virginia engineers and agricultural scientists has developed a process to blend poultry litter - and other types of manure - with diesel fuel to burn in any diesel engine.

The result is that millions of tons of poultry manure could become a valuable commodity instead of a costly burden.

Al Stiller, a chemical engineering professor and researcher, started the work while looking for a way to liquefy coal. He began using old tires as a source of hydrogen for the process. While his process worked, the supply of tires, despite what you may see in landfills, is not sufficient to provide a reliable long-term energy source.

After looking around for a more consistent source, he settled on chicken litter. The chicken manure worked so well in his process he found he didn't need to add coal.

Stiller found that mixing chicken litter and water at the right temperature results in a liquid that will burn by itself, but mixes very well with diesel fuel. He's tested it in diesel fuel with as much as 35 percent manure.

Working with Stiller on the project are Rich Russell, an agricultural scientist, and Eric Johnson, a mechanical engineer.

West Virginia alone has about 350 poultry farms, producing about 91.3 million birds.

Russell says the average West Virginia poultry producer has about 500 tons of poultry manure to dispose of every year. He figures converting it to fuel would not only eliminate a potential hazard and water pollutant, but could create another source of income for producers and the state's economy. He figures that 500 tons of chicken manure could be worth as much as \$250,000 when converted to fuel. Multiply that by the number of poultry producers in the state and it looks like an \$87.5 million industry.

"Needless to say, this could have a tremendous impact on agriculture," Stiller says. He quotes WVU agricultural scientist Bob Daly as saying it can change everything we thought we knew about agricultural science.

While Stiller and Russell continue to work on the process, Johnson has taken on the task



This laboratory-sized "reactor" creates a liquid out of manure that can be mixed with diesel fuel and burned normally.

of building a reactor large enough to process half a ton of manure per day. Then they want to build a prototype plant that will process 2 tons per day.

"Our idea is to make a farm-sized reactor, so farmers can produce this fuel for themselves," he says. Stiller sees chicken manure fuel being used by farmers to reduce their petroleum diesel needs by 35 percent.

Contact: FARM SHOW Followup, Al Stiller, professor, College of Engineering and Mineral Resources, 413 Engineering Science Building, Box 6102, Morgantown, W.Va. 26506 (ph 304 293-2111, ext. 2408; E-mail: astiller@wvu.edu). Or you can contact Rich Russell (ph 304 293-2531, ext. 4437; E-mail: russell@wvu.edu). Contact Eric Johnson at 304 293-3111, ext. 2309; E-mail: ejohnso2@wvu.edu).

New Doors For Old Silos

Got an old silo that needs new doors? Agri-Door is the place to call.

Operated by the Jacob Stoltzfus family, Myerstown, Pennsylvania, the company specializes in doors and hardware for old silos.

Stoltzfus says there were more than 300 different styles and sizes of doors used on silos in the 1960's, and he has specs on most of those. He can make doors from either exterior grade plywood or, for a better and longer lasting door, from western red cedar. All doors consist of two layers of wood with a layer of polypropylene insulation between them, so silage won't freeze to the door in winter.

He keeps a supply of doors on hand and can fill small orders immediately. "I can ship up to 10 doors UPS, and we can overnight small orders," he says.

Agri-Door also makes hardware for silo doors and has specs for the hardware used on most silos. "We can make anything if we have the measurements," he says.

Depending on the door size and the materials used, doors range in price from \$25 to \$45 each.



If you have an old silo that needs new doors, Jacob Stoltzfus can make them for you.

Contact: FARM SHOW Followup, Jacob Stoltzfus, Agri-Door, 649 S. Ramona Rd., Myerstown, Penn. 17067 (ph 717 949-2034 or toll-free 877 484-4104).



Two-part adapter fits on Deere 9000 series combine's header drive shaft and the driven shaft of the head. No modifications are needed to either head or combine.



Adapter Helps Mount Older Heads On Newer Deere Combines

To demonstrate Deere's 9000 series combines as soon as possible when they were first introduced several years ago, salesmen at Ernie Williams Ltd., a north central Iowa Deere dealership, needed to use headers that fit on previous models because the new combines arrived before the new headers. To do that, they designed an easy-to-use two-part adapter that fits on the combine's header drive shaft and the driven shaft of the head.

Tim O'Connor, representative for the dealerships, says the adapter worked so well, they decided to make it available to Deere

combine owners. No modifications are needed to either head or combine, except on the \$9,550 walker model. "You just slide the adapters into place, mount the head on the combine, and go," he says.

The two piece adapter kit sells for \$385. You can order by phone or online.

Contact: FARM SHOW Followup, Tim O'Connor, Ernie Williams Ltd., 715 1st Ave NE, Buffalo Center, Iowa 50424 (ph 641 562-2228; E-mail: to connor@erniewilliams ltd.com; Website: erniewilliams ltd.com).

Mud Won't Stick To Stainless Steel Shovels

John Hoff, Weiser, Idaho, got tired of mud sticking to his shovel every time he had to trench in a siphon tube to irrigate his sugar beets and spuds.

"Out here, we irrigate everything, so we spend a lot of days with a shovel for company," he says. "If you have clay soil and that shovel is a little dirty or rusty, the mud sticks to it and you spend as much time cleaning the shovel as you do actually working."

One day, Hoff noticed that mud doesn't stick as much to stainless steel. Right then and there, he decided to make himself a stainless steel shovel just for use around his irrigated fields.

He made one and headed to the field. He found that he could work faster with less effort.

When friends and neighbors saw the shiny shovel in the back of his pickup, he gladly explained all about it. Before long, he was spending several hours every week making shovels for them and others. He now sells them as Deer Flat Stainless Steel Shovels.

"They're virtually indestructible," he says. "I shape each shovel by hand from a single piece of 12 gauge no. 316 stainless steel, the hardest grade made. The metal stays malleable, so if they get damaged, they can be bent back into shape and won't crack. I've had them run over with a big Caterpillar and they just pop back."

Hoff searched all over for a handle that would complement his stainless steel shovels and decided that the best available was a standard ash wooden shovel handle. However, rather than riveting the handle to the shovel shank, he fastens it with super glue. "This helps preserve the strength of the wood, so very few of them break," he says.

He stamps the year of manufacture and the name of the owner on each of his shovels so that if one happens to bounce out of the pickup along the road, it can be returned to



Hoff says his handmade stainless steel shovels are "virtually indestructible".

the owner.

"They're nice-looking tools," Hoff claims. He says one owner is so proud of his that he hangs it over the fireplace in the winter to display it.

Hoff makes two different sizes of shovels - #0 is 7 in. wide, 8 3/4 long and #00 is 8 in. wide and 9 1/2 in. long. A #00 shovel sells for \$54.99 and a #0 for \$59.99. Add \$5 to both for shipping and handling. He recently started making Stainless Steel Hoes, too.

Contact: FARM SHOW Followup, John Hoff, Deer Flat Stainless Steel Shovels, 990 Jenkins Creek Road, Weiser, Idaho 83672 (ph 208 549-1232; Website: www.buyidaho.org/oilerup.htm).