

Wood Gas Generator Produces "Free" Power

By Janis Schole, Contributing Editor

Owners of a Manitoba company say they've almost perfected a patent-pending wood gasification process that could be economically viable on a commercial scale. They gasify wood and other organic material and burn the gas in big engine-powered generators.

Arthur Zegil and Jude Sanson of W2E Technologies, say what makes their system different is that they've come up with a way to burn the tar out of wood gas. This has been a big stumbling block in the past. Tar from wood gas would gum up engines.

The key to their success, according to Zegil, is they've found a way to operate at a high enough temperature (3,272° F), and distribute that heat evenly across the gas fire bed.

The gas that's produced passes through funnel-shaped cyclones, which filter off the large dust particles and soot. Then a large condenser cools the gas, making it denser to produce higher horsepower.

"The energy generated by the process has commercial uses that include large-scale electricity production and water purification," according to Zegil. "We're currently operating a privately financed project at FinMac Lumber near Winnipeg. We're converting thumb-sized wood chips into a flammable mix of hydrogen, methane and carbon monoxide. By adding 4 percent diesel, we're using these gases to run a huge Mirrlees stationary diesel generator."

The Mirrlees style of engine has been around for many decades and is designed to

run 24-7, for years on end, he says. It produces 175 kilowatts of electricity on about 4,400 lbs. of wood chips per hour and just two gal. of diesel.

The current system could produce two megawatts of electricity but the company doesn't need that much power.

"This prototype heats and lights our buildings, producing all the power we need," Zegil says. "The next step will be to get hooked into the power grid system."

The system will also work well with crop residue such as flax straw and hemp, once they've been pressed into cubes. Zegil says they have experimented somewhat with plastics, garbage, paper and coal with good success. However, the gasifier hasn't yet overcome the challenge of using wheat straw, since it's difficult to filter out the silicate residues it produces. "We've also had good results using biodiesel made from pig lard and canola," he explains.

Zegil says more work needs to be done to find a way to use waste heat from the gasifier and engine exhaust. The temperature reaches 604° F, and it may be possible to use this heat for drying the wood chips or heating buildings. The heat could also be used to purify water through distillation.

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Process involves gasifying wood and other organic material and burning the gas in big engine-powered generators.



"This prototype heats and lights our buildings, producing all the power we need," say Arthur Zegil and Jude Sanson of W2E Technologies.



W.T. Elliott modified this Ford F-150 by mounting a 3-pt. hitch and dolly wheels on back. Lets him haul bales down the road at 50 mph, or even do light disking.

Modified F-150 Fitted With 3-Pt. "Dolly"

A short frame Ford F-150 with a 3-pt. hitch and dolly wheels on back can do the work of a farm tractor and more, says W.T. Elliott, who hauls bales down the road at 50 mph and also transports equipment. He even does light disking with the truck.

"When I first fixed up the wrecked F-150, I mounted a 3-pt. on the rear," he explains. "But when I used a hay fork or lifted heavy equipment, the front end would come off the ground."

So Elliott shortened up the frame, moved the rear axle forward, and added a set of wheels on back. He cut apart a dolly from an old house trailer and welded the axle stubs to steel tubing. The steel tubes are welded to each side of the truck frame behind the original rear wheels. They're just high enough on the frame that when the truck isn't under load, the dolly wheels are off the ground. Pick up a bale or mount an implement on the 3-pt., and they settle into place, helping to support the rear end and keeping the front end on the ground.

To add a 3-pt. hitch, he built an upright frame with 4 by 4-in. channel iron, welding it to the truck frame. The frame is about 2 ft. high and about 4 ft. wide. Two brace arms extend down from the top corners to the truck frame for added support.

A 1 1/2-in. shaft mounts on pillow block bearings about halfway up the vertical frame. It provides the lift for the 3-pt. arms. He mounted a cylinder to a piece of channel iron he ran across the F-150's frame. The end of the ram connects to a short length of steel welded to the top of the shaft. Two sets of pillow block bearings are welded to either end of the shaft. Steel straps extending down from the bearings attach to the lift arms. When the cylinder ram is extended, it rotates the shaft, causing the arms to lower. When it is drawn back, the arms lift. The top link for the 3-pt. attaches to the top of the vertical frame.

"I built the arms out of doubled lengths of 1 1/2-in. cold rolled steel," says Elliott. "They are mounted to the truck frame on pillow block bearings. The hydraulic pump and reservoir are off an old 416 IH combine, and the hoses are from an old cotton picker. About all I had to buy was the spool valve."

Elliott mounted the spool valve under the cab. A rod runs up from the spool valve and through a hole in the cab floor to a spot behind the driver's seat. A lever on the rod lets Elliott control the 3-pt. from his seat.

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"Big Bird Feeder" Made From 5-Gal. Bucket

If you like to feed birds, you can make sure they always have plenty of food with this feeder that's made from a 5-gal. plastic bucket and is designed to slip over the top of a common steel T-post.

The Big Bird Feeder holds more than 15 lbs. of black oil sunflower seed and up to 30 lbs. of mixed seeds.

"It works great for people who are away from home at times, or just don't want to go out in the cold. It will keep birds fed for several days at a time," says Robert Hagerman, Charman Products, Lawrence, Kansas.

The feeder comes with a weather-tight, snap-on lid and four snap-in feeder cups and perches. A center-mounted tube at the bottom slips over the T-post. To mount the feeder, you lift the bucket above the post, align the tube in the bottom of the bucket, and slide the bucket down into place. The bucket can be filled either on the post or on the ground.

"I got the idea after an illness kept me away from home for extended periods of time. I noticed my bird feeders were empty and my bird friends long gone," says Hagerman. "So I converted a 5-gal. bucket into a bird feeder." Sells for \$29.94 plus S&H.

After creating the feeder, Hagerman decided to make more products including a suet feeder and a rustic-style bird house. The Rustic Bird Home measures 9 in. tall by 5 1/2 in. wide and deep. It's made from cedar wood using stainless steel connectors, and has a waterproof recycled plastic/wood composite roof. It also has an easy-open side door for cleaning and rain-resistant slanted side vent holes for healthy air flow. It comes with a 1 1/2-in. dia. predator-resistant entry tube.

Two different models of suet feeders are available, one with two sides and one with three. They sell for \$11.95 and \$24.95, respectively, plus S&H.

Both the feeders and bird house make use



of a slotted "Easy T-Mount" that screws onto the feeder or bird house, or any other post-mounted project. It comes with a T slot and wedge-grip design that ensures a solid front or back installation. You attach the Easy T-Mount to the bird house or feeder and slide it over a standard 1 3/4-in. or smaller T-post.

Easy T-Mount sells for \$9.95 plus S&H. Also available is a T-Post Tray Feeder. It sells for \$14.95 plus S&H.

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