

Small Scale Biogas Replaces Propane

By Jim Ruen, Contributing Editor

Jeff Hoard has reduced the number of visits from his propane dealer thanks to his home-built biogas system that turns manure from his livestock into methane gas.

"Our system consists of eight 55-gal. barrels that act as digesters," explains Hoard. "The gas flows through two simple pvc manifolds that 'scrub' the gas, draining moisture and serving as shutoff valves. Once scrubbed, gas is stored in a series of tractor tire inner tubes before being piped to the propane line."

The off-grid farmer and his wife use windmills to pump water, a solar panel for electricity, wood to heat the house, gas for cooking, gas for hot water heat, and gas to run his refrigerator and freezer. When his biogas unit is working, the propane flow shuts down.

"I bring the biogas into the propane line at the output side of the regulator," explains Hoard. "Any time the biogas pressure gets over 1/2 lb., it shuts down the propane flow, and everything runs off biogas which is 70 percent methane and 30 percent carbon dioxide. When production drops, the propane runs."

In ideal conditions of 65 degrees, Hoard's biogas system produces 24 hours a day, maintaining about 15 lbs. of pressure. Living in the high country of Nevada, summer nighttime temperatures can drop to 40 degrees, slowing down production. In the winter, the

drop off is even faster and more complete.

"As long as the sun is shining, I can produce gas," says Hoard. "My problem is keeping the barrels warm."

He relies on a simple sunroom built from recycled patio doors and a tin roof hinged for easy access. Hoard plans to build a better insulated sunroom that will warm his barrels even more. He also plans to add a few more barrels to the easily expandable system.

"It only cost us about \$350," he says. "We've used it since this past November and have had no problems."

Hoard fills each barrel with about 40 gal. of manure slurry. He empties and refills according to gas production. In a warmer climate, he says, each barrel would generate biogas for about 40 days.

Even the spent slurry gets recycled. "It's weed free, high in nitrogen and has very little odor," says Hoard. "It makes great fertilizer."

He says the simple system is one that anyone with some manure or even food waste could set up and use. He's willing to provide detailed descriptions of the system and information on how he set it up for a fee.

Contact: FARM SHOW Followup, HM Ranch, HC 61, Box 6108, Austin, Nevada 89310 (ph or fax 775 217-9264).



Jeff Hoard and his home-built biogas system which turns manure into methane gas.



System consists of eight 55-gal. barrels that act as digesters. As it's generated, gas flows through two simple pvc manifolds that "scrub" it, draining moisture. Gas is stored in a stack of inner tubes.



Simple bale mover uses a forecart behind a team of horses or an ATV or other vehicle.

Simple Bale Mover For More Than Just Horses

This simple bale mover is designed for use with a forecart behind a team of horses. It works just as well with an ATV, UTV or other vehicles. Reinhard Merten-Melching, Barntrup, Germany, built the rig.

"It can lift bales up to about 900 lbs.," says Merten-Melching. "I use it with straw and silage bales."

The bale mover is a simple curved rack hinged to the axle of a cart. To load, the cart is backed up with the rack in vertical position. It's then strapped to a bale sitting on end. A winch mounted on the tongue of the cart pulls the rack with bale into horizontal and transport position over the axle. At the destination, the winch is released and the weight of the bale extended past the axle returns the rack to vertical for release.

"The rack was built with 4-in. black pipe,"



A winch is used to load bale onto cart.

says Merten-Melching. "The trailer itself is an axle from a car with a pipe from a tow bar for the pole." Merten-Melching speaks only German, so English speakers should contact him by email.

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Rolling Walker Offers Mobility To The Disabled

After a friend suffered severe injuries in a car crash, Grant Hanson of Glenwood, Minn., started working on a new-style walker that has allowed the formerly wheelchair-bound friend to regain strength in her legs.

Hanson started with a custom-made oversize walker that had been ordered but never picked up from a local business. He attached two 3/4-in. steel rods that pivot on ball bearings from the walker's legs to above the handles. The rods connect to a linkage of hinged 1/4 and 3/8-in. flat metal pieces and needle bearings that wraps around Joyce's chest and back. It's covered with rubber and cloth.

"If her legs fail she'd drop about two inches, but she can't fall," Hanson says. "When she's walking, it floats with her so it doesn't rub her body."

The design could allow her to stand up and work at a counter, for example, or she can turn the lever, slip off the support and turn around to sit on the walker's seat.

Hanson has applied for a patent and is working on how to make the walker out of lighter materials and design it to be effective and safe for people of all sizes.

In June, The Walker Rescuer won the \$1,000 grand prize at the Minnesota Inventor's Congress, as well as the \$500 People's Choice award, a gold medallion and the best working model award.

Hanson says he believes The Walker Rescuer could be used as a recovery tool for wounded veterans as well.

"It's like having a physical therapist alongside of you," he says. "This walker offers security, freedom and independence."

He adds that the local Vietnam Veterans of America group supported the project, by contributing \$400 for parts to build the prototype.

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Photos courtesy Amy Chaffins/Pope County Tribune

New-style walker allows Grant Hanson's formerly wheelchair-bound friend to regain strength in her legs.



"It's like having a physical therapist alongside you," says Hanson.