

## Diesel Pickup Gets 70 Mpg On “Manure Gas”

Danny Kluthe has a 6,000 head hog finishing operation in Eastern Nebraska, but he's producing a lot more than pork. Six years ago he built a methane digester with the idea of selling electricity produced by the system. He's doing that, but is also using compressed methane gas to power his farm vehicles and equipment.

“When we first built this system I thought the payback over 15 years was going to be from income for the electrical power,” says Kluthe. “But we're now burning methane gas in my diesel pickup and getting 70 miles to the gallon. I'm also using a 90/10 methane/diesel mixture in my farm equipment and getting a 30 percent boost in torque, cleaner exhaust and smoother running engines.”

Kluthe's hog operation produces about 9,000 gal. of liquid manure every day, resulting in about 30,000 to 40,000 cu. ft. of compressed methane gas. It takes 128 cu. ft. of methane to equal a gallon of diesel, so that means Kluthe's daily methane production is about 230 to just over 300 gal. Multiply that by the price of natural gas, which is comparable to methane, and the resulting \$400 to \$600 numbers are reason for excitement. The methane is produced in a system that in some respects uses more gravity power than manpower.

At Kluthe's farm, manure from his hog operation flows down a slope into a 14-ft. deep air-tight digester. It remains there for 21 days, gurgling and belching gas. The digester is kept at a constant 120 degrees to help bacteria break down the sludge. During that time, methane is produced and transferred to a storage tank where it's used to fuel a stationary engine. That engine runs a generator, which produces electricity that's sold to the local power district. His system produces enough electricity to power about 40 homes a day. Excess methane used to be burned off, but now Kluthe compresses and stores it for use in vehicles. That portion of the system was designed and built with the help of Kevin Kenney, ag engineer and president of Grassroots Energy in Lincoln, Neb.

“My hogs are now supplying all the fuel I need for my farming operation,” Kluthe says.

Kluthe says another benefit from his system is that once methane is removed from the manure, the sludge is odorless. Nutrients in that sludge are also more readily available for his crops, so he's getting a more efficient fertilizer.

The cost of Kluthe's methane system was considerable, with the largest investment being the stationary Cat engine for a power



Danny Kluthe's methane digester produces up to 40,000 cu. ft. of methane gas every day from hog manure. The enclosed system also eliminates the manure odor.



source. “I probably could have gotten by with a smaller engine just for compressing gas, but I didn't know that at the time,” Kluthe says. Still, he feels the system is more than worthwhile, because he's removing odor from his operation and powering vehicles and equipment with an environmentally-friendly fuel. He has a patent pending on his compressed gas collection system and hopes to market products for methane production

from manure in the near future.

“Hog producers will soon be energy sufficient, producing electricity and fuel for their own operations and having excess products available for sale to others,” Kluthe says.

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If you don't have a tractor handy, you can use a semi-tractor to shuttle big equipment by adding a Retriever hitch on back.

## Semi Hitch Shuttle Farm Equipment

Farmers who need to shuttle big equipment quickly and don't have a tractor handy can use a semi-tractor for the job by adding a versatile Retriever® hitch from Bestway Manufacturing.

Dave Benson, Marketing Director at Bestway, says a Retriever can be mounted on a semi tractor in about 5 min. so the rig can easily pull a large planter, tillage equipment, grain cart or fertilizer applicator. Its towing capacity is rated at 35,000 lbs.

“We made the Retriever rugged and versatile because farmers need that for the big equipment they're working with these days,” Benson says. It has a 6 by 10-in. structural steel main beam with a reinforced mounting system. The 1,700-lb. lift mast mounts securely to a semi-tractor fifth wheel receiver with a plate and kingpin. It matches semi-tractor plate heights from 5 1/4 to 10 1/4 in. and adjusts 8 in. fore and aft. Bestway supplies chains and binders to wrap around a truck frame and cinch the Retriever in place.

Benson says the Retriever will carry 12,000 lbs. on the drawbar using receivers for Cat .II and Cat. III hitches. Optional Cat. III or Cat. IV removable drawbars with a 2-in. pin are also available. A drop pin hammerstrap allows easy implement hookup. Set up as a 2-point mast, which Benson says is ideal for large planters, the Retriever can lift an implement hitch up to 40 in. off the ground. The two-point lift capacity is 16,000 lbs.

Hydraulic power to operate the lifting mechanism comes from either a 12-volt



Hitch lift mast mounts securely to semi-tractor's fifth wheel receiver with a plate and kingpin.

hydraulic power pack or a Wet Kit that's ready to plumb into a semi with those lines available. The 12-volt system has a deep cell battery and charging system that plugs into a semi's trailer light receptacle. The battery and charger mounts in a weather-proof enclosure with a removable lid. The enclosed box is also on Wet Kit models where it serves as a tool or storage box.

The Retriever is operated with a dual function remote control that raises and lowers it and controls the hydraulic outlets. It has DOT approved LED lights and a 7-pin light plug. A heavy-duty lift hook is welded to the top of the mast for removing and installing it. Bestway sells the Retriever direct from its factory priced at \$7,395 for the Wet Kit Model and \$7,795 for the 12-volt model, shipping extra.

Contact: FARM SHOW Followup, Dave Benson, Bestway Inc., 2021 Iowa St., Hiawatha, Kan. 66434 (ph 785 742-2949; www.RetrieverTH.com).

## Used Tennis Nets Make Great Retainers

George Pinkerton uses old tennis nets from city recreation departments to hold cargo in truck boxes. He cuts them at the center point, removes the steel cable, and reattaches them lengthwise to make cargo nets.

“I've made 6 or 7 of them over the years,” says Pinkerton. “Usually, you don't even have to tie them down. Just drape them over what you're hauling, and the air moves right through the netting.”

Pinkerton uses them to hold down garbage bags. He says they really come in handy to haul loose leaves to the compost site. A former Beatrice, Neb. city parks manager, he now manages a non-profit group in Lincoln, Neb.

“We take care of downtown Lincoln's garbage and landscaping maintenance needs,” says Pinkerton. “We haul leaves to the compost site and haul compost back. The nets are easier to use than tarping.”

If you don't have access to used tennis nets locally, Pinkerton suggests contacting repurposedMaterials. They offer a variety of



George Pinkerton uses old tennis nets to hold cargo in pickup beds. “They're easier to use than tarps,” he says.

repurposed netting starting at 15¢/sq. ft. (ph 303 321-1471; www.repurposedmaterialsinc.com).

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## Old Johnson Outboard Repowered With Mower Motor

Al Smith got a good deal on an old boat, but the outboard motor was shot. He repowered it with a motor from an old riding lawn mower.

“The old 35 hp Johnson motor was corroded and wouldn't start,” recalls Smith. “Water had gotten in, and the cylinder walls were crusted up.”

The outboard shaft, transmission and propeller were still fine. Smith removed the Johnson motor and bolted on an 11 hp Briggs & Stratton.

“I measured the shaft on the engine and the one on the propeller drive and ordered a coupling to match the two,” says Smith. “I did have to modify the throttle and ground out the Briggs & Stratton.”

Smith figures the cost to repair the motor would have been more than \$1,000. “My only cost for repowering it was the coupling.”

While the Briggs & Stratton doesn't have the power of the original motor, it's enough for Smith. “It pushes the boat along,” he says. “I took it out in the fall, adjusted the carburetor and the throttle, and it worked fine.



Al Smith repowered an old boat with the 11 hp Briggs & Stratton motor off an old riding mower.

I can't wait to get it out this spring.”

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