

## Mini Digesters Built For Smaller Dairy Herds

A new manure digester from Martin Energy Group can economically produce electricity from herds as small as 75 head or less. The flexible design allows it to be modified for herds up to 500 head. The low-cost system consists of only 2 major components: a digester reactor and a container with electromechanical systems and controls.

The first 20 kW system was installed in Ontario more than 2 years ago, explains John Hawkes, Martin Energy Group.

"It was the first, factory-built anaerobic digester in North America," he says. "Everything was then delivered on a flatbed."

The digester/reactor is a stainless steel tank with a liner and double insulated roof that simply bolts together. This is where the anaerobic process turns manure into methane.

A 20-ft. long shipping container holds the technology needed to turn the methane into energy and controls the entire process. It includes a hydrogen sulfide (H<sub>2</sub>S) management system with carbon filtration, boiler, genset, valves and control systems.

It also includes connections to the local electrical grid for sale of excess power.

"The only other elements needed are pumps and pipes to move the manure to the digester and to remove digestate," says Hawkes. "The only outside expertise needed for installation is an electrical contractor. Once it is set up, it can all be controlled from an app on a smartphone."

Once the system is set up, manure is pumped into the reactor several times a day, with an equal amount of digested manure pumped out. Biogas formed through anaerobic fermentation in the reactor is purified and burned in an internal combustion engine attached to a generator. Electricity in excess of farm use is sent to the grid. Discharged manure is run through a screw press to separate liquids and solids. Separated solids can be used for bedding and liquids applied to fields.

Hawkes says systems are being assembled in Europe at the rate of 1 to 2 systems per week for deployment worldwide. A second



**Mini digester can produce electricity from herds as small as 75 head or less. It produces biogas that fuels an internal combustion engine attached to a generator.**

system has been installed in Pennsylvania, and several more are in process. While the company has been installing digesters for large herds for a number of years, small herd-sized systems have not been readily available until now.

"When we found this Bioelectric system in Europe, it seemed exactly what was needed. It is easy to run, low cost and simple. It suits

small farms," says Hawkes.

"Costs vary, but a system designed for a 200-cow herd runs around \$400,000," says Hawkes. "The larger the herd, the faster the payback."

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## Hot Pepper Spray Stops Poultry Pecking

Anyone who has raised chickens or other poultry knows that birds can gang up on vulnerable birds and peck them to death. Stop That Peckin' spray stops the problem, says Janet Sauber, CEO of J.M. Saddler, Inc., in Texas, which formulated and sells the spray. "We recommend you spray new birds that enter the flock as well as sick or injured birds. It'll keep them from being attacked," she notes.

The spray contains capsaicin oil extracted from hot peppers. It is unpleasant and distasteful, but doesn't hurt the bird it's

sprayed on. It tastes bitter if you accidentally get it in your mouth.

"A little (one spray) goes a long way," she adds.

The 8-oz. bottle has about 200 sprays. Often, one spray treatment is enough to protect a bird.

"Basically what you are trying to do is get them to change behavior and once they stop, they usually stop for good," Sauber says.

Stop That Peckin' works for birds raised in large groups in buildings as well as backyard poultry, including chickens, ducks and

turkeys.

Stop That Peckin' sells for \$13 on the company's website. The company also makes several "quit chew" products for horses and dogs.

"We use Texas A&M University as a resource. It's nice to have someone right here that we can go to, to ask questions and get updates of regulations," Sauber says.

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**Hot pepper spray is unpleasant enough to stop poultry from pecking, but doesn't hurt the bird it's sprayed on.**

## High-Tech Crop Monitors

"We're on the cutting edge of irrigation management using high-tech sensors attached to plants that measure water stress in growing crops," says Amit Shiloni of Phyttech. "Our stem diameter sensors are being used on corn, soybeans, cotton, milo, dry beans and industrial hemp."

The sensor is attached to the plant stalk. It measures water moving through the plant by detecting microscopic changes in the stalk diameter. The amount of shrinkage throughout the day correlates to the actual stress level of the plant.

"The data we collect from those sensors is transmitted through our communications systems to our servers, then it's analyzed using crop specific algorithms," Shiloni says. "Plant status is shown in a color coding index with red representing high stress and green normal. This information is sent to an app on a grower's smartphone, where he can analyze it to determine when and how much irrigation is needed to optimize production."

Phyttech devices have been used for the last 3 years in Texas, Nebraska and Kansas. Shiloni says the sensors greatly aided irrigation management and resulted in fewer days of growing season stress, helping producers avoid over-watering and saving on irrigation costs.

Shiloni says the company already has more than 50,000 sensors being used by customers in California and the Midwest. They also have sensors for fruit trees and vines. "This is the most reliable and robust way to manage irrigation needs because it measures plant or tree conditions in 'real time', taking into consideration all the different field conditions that can affect the growing plant's water



**Sensor measures water moving through plant by detecting changes in stalk diameter. The information is analyzed and sent to an app on irrigator's smartphone.**

needs. It's more precise than depending only on soil moisture or weather conditions," Shiloni adds.

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**Stoltzfus rebuilt this Deere 300 picker, which he says was the last and best model the company ever made.**

## Rebuilt Deere Corn Pickers

Our company repairs and rebuilds John Deere corn pickers to like-new condition. The photo shows a Deere 300 picker that we rebuilt. It was the last picker the company ever made and is built better (fewer moving parts, etc.) and does a better job (less shelled corn in the field) than any of the older model pickers made by any company, including New Idea.

The Deere 300 is equipped with a 40 series combine head. None of the older picker models had deck plates, so when the ears hit the snapping rolls there was a lot of butt shelling and corn loss in the field. The combine head also works better in trashy

conditions.

Our company has made some improvements on this picker that weren't available from Deere, such as adjustable deck plates. We also can install diesel engines on pickers for anyone who farms with horses. We offer a wide variety of aftermarket parts, and most of them are better quality than the original.

We have a variety of pickers in various conditions for sale, and also repair and rebuild early model IH and Deere corn heads. (Jonas Stoltzfus, Houston Run Mfg., 40-B Pequea Valley Rd., Kinzers, Penn. 17535 ph 717 442-9631)