



Bio-Gas Renewable Energy Opportunities on the Dairy Farm

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Editor's Note: This is a special feature from the Center for Dairy Excellence exclusively for Farmshine newspaper.

Pennsylvania has 7,400 dairy farms with more than 543,000 dairy cows. In addition to producing 10.7 billion pounds of milk, those cows collectively produce 10.75 billion pounds of manure. Historically viewed as a waste product, cow manure is quickly becoming a valuable commodity on the farm through the process of methane digestion.

The commonwealth has 15 methane digesters, most on dairy farms, producing approximately 16.5

million kilowatts per hour of energy annually. A recent EPA study identified 157 methane digesters across the U.S., just 1.9 percent of the 8,000 farms considered to be facilities where methane digestion is technically feasible.

With recent advancements made in methane digestion and opportunities becoming clearer, the Center for Dairy Excellence recently hosted a discussion session with dairy farmers, state policy makers, public utility representatives and environmentalist activists to discuss opportunities and challenges for expanding on-farm energy production in the state.

The meeting provided a platform for those who participated to talk openly about the opportunities

and obstacles dairy farms face when installing a methane digester. It also provided a starting point to improve the lines of communications between dairy farm families and the public utility companies.

While a methane digester may not fit every dairy farm facility, the opportunities for producing and using bio-gas, selling energy, generating bedding sources, reducing odors and partnering with companies looking for environmentally-friendly ways to dispose waste are very real.

This month's *Farmshine* center page features comments from three of the dairy farmers who attended that meeting. For more information, call the center at 717-346-0849



MIKE BRUBAKER

Brubaker Farms
Mount Joy, Lancaster County

Mike Brubaker, with his father Luke and brother Tony, are partners at Brubaker Farms, a 900-cow dairy that also includes poultry and cropping enterprises. The Brubakers built a methane digester for their dairy in 2007.

What are the benefits of a methane digester?

"One of the biggest benefits is that it is good for public relations," Mike said. "It creates odor reduction and results in less manure hauling. The solids remaining after the process also make great bedding for the cows.

"Being able to harness the methane and run an engine to convert that to electricity is nothing short of amazing. It offsets our electricity costs, allows us to sell excess electricity to the community, and improves air quality which is something the environmental community appreciates. We are able to make about 200 kilowatts of energy an hour from the digester."

What were the biggest obstacles? "The capital outlay it requires is by far the biggest obstacle. Initially we had to figure out how we were going to afford it, and we were fortunate to have access to grants. Unless you have enough cows, the investment just becomes too difficult to afford. However, as more companies begin installing digesters, the competition may reduce the costs. Tighter state and federal budgets create less opportunity for grants in the future."

What future opportunities exist? "We are taking a look at whether it is economically feasible to install a second engine for the digester to capture more of the methane," he said. "We are more focused on looking at ways to be more energy efficient or greater use the waste heat coming off the generator. We are already using it in several places on the farm."



STEVE REINFORD

Reinford Farms
Mifflintown, Juniata County

Steve and his wife Gina milk 500 dairy cows and farm 900 acres in the center part of the state. They installed a methane digester three years ago on their dairy facility and are currently considering options for a second digester at a heifer facility.

What are the benefits of a methane digester?

"It gives us a lot of additional income from selling the electric, capturing the heat from the generator to pasteurize milk and dry corn, and heating the house and barn," said Steve. "We also sell the separated solids for cow bedding, and we receive tipping fees for digesting off-farm waste like food waste from Wal-Mart.

"There are a lot of benefits, and now that we understand the value of green energy, we are considering putting another digester on a heifer facility down the road."

What were the biggest obstacles? "I didn't really have any big obstacles when we built the digester," Steve said. "We built it faster than we expected, and things went really smoothly.

"We're making more gas than they told me we would, and I should have sized my motor bigger. It's really working well. If I had to do it all over again, I would start tomorrow."

What future opportunities exist? "I would like to see smaller farms implement the technology," said Steve. "There is a company working on that, and if we can capture some of the food waste out there to put in the digesters, it makes them more feasible. A lot of progress is being made at the methane digester companies to make them more practical for smaller dairies."

"There is a lot to be excited about, and bringing together the electric companies to talk with farmers is a great step."



JIM HARBACH

Schrack Dairy
Loganton, Clinton County

Jim, his wife Lisa and brother-in-law Kevin Schrack are partners in Schrack Dairy, an 850-cow dairy with 1800 acres. They started their methane digester in August 2006.

What are the benefits of a methane digester?

"It really helps lower our cost of milk production," Jim said. "We reclaim the heat from the generator engine, and we use it to dry towels from the milking parlor, heat the parlor floor and run the hot water heaters. Just by switching from boilers for the hot water heaters and heated floors to the heat from the generator saved us 10,000 gallons of fuel a year.

"Last year we produced 1.2 million kilowatts of electricity. With a kilowatt valued at 10 - 12 cents, that's about \$140,000 a year. And we use the solids for bedding, which saves us about 52 trailer loads of sawdust a year.

What were the biggest obstacles? "When we built our digester, the net metering law [that Pennsylvania now has] wasn't passed yet. So, for the first five months, we made power that we sent back to the electric company and didn't get paid for it," Jim said.

"It was also a challenge to get the lender on board. Lenders aren't hearing a lot of positive stories about methane digesters, and they are concerned about the project viability."

What future opportunities exist? "Taking off-farm waste — like dog food, rejected milk and other food waste — can increase our efficiency from 80 to nearly 100 percent. There is a lot of potential for farms to be linked to places with food waste.

"It is also positive to hear PPL and other electric companies being more supportive of these projects."