

California Dairy Runs on Manure Power

MARSHALL, Calif. — Imagine a dairy farm of the future that operates on cow manure, saves \$6,000 in monthly energy costs, and fuels the family car.

But wait. This is not science fiction, but a reality show for Straus Family Creamery when it created electricity from its new methane digester for the first time last week.

“My brother Albert is an organic farmer who has always pushed the envelope to make farming sustainable,” said Vivien Straus at the official kickoff event. “He drives an electric car and has waited 25 years for this project to happen.”

The \$280,000 digester, nestled in a lagoon, captures naturally occurring gas from manure and converts it into electricity. The process will capture methane and other greenhouse gas before it escapes to the atmosphere and will eliminate almost all organic pollutants from the waste water the family dairy farm generates.

Heat from the generator warms thousands of gallons of water that may be used to clean farm facilities and to the heat the manure lagoon. The waste water left over after the methane is extracted is deodorized and used to fertilize the fields.

The system is funded in part by California’s SB5X alternative energy grant programs with grants from [California’s Energy Commission](#), Marin County Resource Conversation District, California Regional Water Quality Control Board, the [U.S. Environmental Protection Agency](#) and the [U.S. Department of Agriculture Natural Resources Conservation Service](#).

It is the first system to take advantage of regulations of net metering law. That means the Straus operation is allowed to run [PG&E](#) meters in reverse as excess electricity is sent back into the grid.

With this net metering, small farmers like Straus can reduce or erase energy bills but cannot be paid for pumping excess energy into the grid.

“It all starts with the cows,” said Douglas Williams, designer of the system and professor of bio-resource and agricultural engineering, bioconversion processes and mechanical systems at [California Polytechnic State University in San Luis Obispo](#). “They produce two times as much manure as milk, in fact each cow produces 120 pounds of waste per day.”

That natural byproduct generates power for the entire dairy and some of the family’s creamery operations.

Multiple Challenges

“Environment is everyone’s business and I think that lagoon is very sexy,” Allen Dusault with [Sustainable Conservation](#) said to the crowd at the kickoff event. “It turns waste into something usable and provides important economic and environmental benefits to California.”

Everyone knows the State needs more renewable energy, he said, and the State’s Renewable Portfolio Standard calls for 20 percent renewable energy by 2017. Renewable electricity from dairy bio-gas is a part of the solution to the State’s electricity problems.

“Global warming is a major problem and methane is a greenhouse gas with 21 times the global warming potential of carbon dioxide,” he said. “When dairy manure is stored in

lagoons, as it is on most dairies, it releases methane into the air. This (digester) system collects the methane and burns it to generate electricity. Combustion destroys the methane and the result is a substantial reduction in greenhouse gas emissions."

Many in Operation

While Straus is a pioneer in this and other agricultural areas, methane digesters are not a pioneering technology. There are many hundreds in Europe, especially Germany, Denmark and Sweden. At least 50 are operating in the United States, though only a handful in California. A dozen are more are under way in the State, thanks to the SB5X program and to the net metering legislation.

"Digesters make dairymen more financially viable," Dusault said. "It's a win for everyone."

The highlight of the afternoon was when Albert Straus cut the ribbon and started the 75-kilowatt electric meter running in reverse.

"That was exciting," he said as stepped away from the panel. "This is one more step toward my goal of having our farm become completely self-sufficient in energy with minimum environmental impact."

[Capital Press](#) story by Julia Hollister, freelance writer.