

'Cow-powered' milk truck debuts

By **LEN RICHARDSON**

THE first "cow-powered" truck made its debut at the 2009 World Ag Expo. Two trucks that normally run on diesel have been converted to run on biomethane produced from cow manure at Hilarides Dairy, Lindsay.

This renewable fuels model reduces global warming emissions (methane from manure), air pollution (from diesel emissions) and dependence on fossil fuels without a food-fuel trade-off in land use.

First in U.S.

Hilarides Dairy is the first in the U.S. to produce compressed biomethane for use as vehicle fuel, as well as the first to produce three forms of renewable energy: gasoline and diesel fuel replacement; propane replacement, and renewable electricity.

The dairy recently installed a biogas upgrading system that processes about one-third of the biogas collected from covered lagoons and upgrades the gas to replace the equivalent of 770 gallons of diesel fuel, 867 gallons of gasoline, or 1,130 gallons of propane. Hilarides initially used the compressed biomethane in two semitrucks, three pickup trucks and four boilers.

"I'll find more and more ways to use it," says Rob Hilarides, owner and operator.

"In California, manure is plentiful,

Key Points

- A "cow-powered" truck has been invented in California.
- Hilarides Dairy is first in the U.S. to produce compressed biomethane for fuel.
- Nationally, biomethane's benefit could be like taking 16 million cars off the road.

the technology is here, and public-private partnerships can make this work," says Allen Dusault, Sustainable Conservation's director of sustainable agriculture. "Biomethane is the only vehicle fuel that is carbon negative. The production process prevents greenhouse gases from reaching the atmosphere, and the resulting fuel is clean burning. Across the nation, the benefit to the climate could be as great as taking 16 million cars off the road."

Smart potential

"For us it made sense to invest in this technology," says Hilarides. "Now we can utilize the dairy's potential to power our trucks, in addition to generating electricity for our operations. This will significantly reduce our energy costs and give us some protection from volatile energy prices."

"This project demonstrates the pride California dairy families have in providing innovative leadership while trying to solve the energy and air pollution issues facing our valley," says

Michael Marsh, chief executive officer of Western United Dairymen. "Rob Hilarides is a great example of a Western United Dairymen member who cares for the environment and is willing to take a financial risk on a new approach to providing transportation fuel."

This breakthrough came from a public-private partnership.

"The U.S. Environmental Protection Agency invested in this project because of its potential to reduce diesel pollution in California's San Joaquin Valley and because of the tremendous co-benefits for greenhouse gas reduction and energy security," says Kerry Drake, associate director, U.S. EPA Air Division.

Dan Pellissier, California deputy secretary of Energy Policy Coordination, adds, "Biomethane gives California a renewable fuel that is locally produced and consumed, clean burning, and carbon negative. Not only does it help California meet our targets for reduced greenhouse gas emissions, it provides clean, renewable energy without com-



HE DID IT: Rob Hilarides, owner of Hilarides Dairy, Lindsay, converts cow manure into biomethane to fuel vehicles.

peting for the state's fertile farmlands." Converting cow waste into biomethane is a straightforward process: The manure is first flushed from the cows' stalls into a covered lagoon. There, bacteria convert the manure to biogas. The trapped gas is then sent from the lagoon to a biogas upgrading system that removes impurities in the gas. Finally, the pressurized biomethane is transferred to the truck's fuel tank.



BIOGAS ROAR: Truck biogas replaces the equivalent of 770 gallons of diesel fuel or 867 gallons of gasoline.



FROM COWS TO TRUCK:

Manure is flushed into a covered lagoon where it is converted to biogas by bacteria. A special system removes impurities. Then the pressurized biomethane is put into the truck's fuel tank.



CLEAN FUTURE:

This Hilarides Dairy truck, converted to run on compressed biomethane, debuted at World Ag Expo. Biomethane is a clean-burning fuel that reduces greenhouse gases.

Power potential from California cows

CALIFORNIA dairy digesters could power about 120,000 cars a year. Nationally, dairies could power about 1 million cars. Other potentials:

Manure available: California's 1.7 million cows produce about 120 pounds of manure per day, which can produce about 30 cubic feet of biogas per day. About a third of these cows are in the northern San Joaquin Valley.

Cost savings: Already, more than a dozen methane digesters are operating on California dairy farms. These digesters are generating enough electricity to power about 3,000 homes and offset more than \$2 million in energy costs to dairy farmers each year.

For more information, visit www.suscon.org/cowpower/biomethane_sourcebook/biomethanesourcebook.php.