

# Facilities

## Manure system gets cooking

By SALLY SCHUFF

**A** MANURE handling system by EarthRenew Co. is one of those things that can sound too good to be true.

It started 10 years ago as an experiment in her kitchen, and Christianne Carin of Calgary, Alb., has now patented the technology that captures the hot exhaust from an industrial gas turbine to "cook" animal manure into a pelleted commercial fertilizer.

While the turbine exhaust is cooking the manure, the turbine itself produces electricity. Selling the electricity offsets most of the fuel costs for running the turbine.

The fertilizer produced from the fresh manure, which is cooked at temperatures of 500-1,000°F, is free of viable pathogens and weed seeds and is eligible for both conventional crop use and certified organic use.

The total energy utilization of the system is 85%, which is about a 60% increase in heat processing efficiency over conventional systems, according to Carin.

Meanwhile, the system shrinks the carbon footprint of waste disposal by reducing manure hauling, energy costs and emissions from land spreading and possibly even the need for lagoons.

Carin said she believes if carbon credits become a reality under a cap-and-trade mandate, EarthRenew will be able to capitalize on the value of those credits.

The energy-saving process, which uses the exhaust to replace the gas burners commonly used in a number of food, feed and fuel processes, has been patented, with more than 2,200 claims in 15 countries and with patents in another 90 countries pending, Carin reported.

EarthRenew has a full-scale commercial fertilizer plant co-located near a 25,000-head feedlot in Strathmore, Alb. It leases a two-acre pad site for the facility, which produces a granular plant food. EarthRenew owns the facility and contracts with the feedlot for the supply of fresh manure — the plant's main raw material.

The facility, which is using manure from about 8,000 head of cattle, can heat process up to 70,000 tons per year of fresh manure into the company's trademarked Organic Matter Fertilizer. The same process can be used

### Key Points

- Manure cooks as electricity is produced.
- System reduces manure hauling, energy costs and emissions.
- EarthRenew contracts with livestock operations for raw material.

for manure from any livestock species that is available in sufficient quantity, as well as for processing other agricultural waste products, paper pulp wastes and biosolid wastes from sewage plants.

The company's next thrust will be to target additional installations at livestock operations in the San Joaquin Valley of California, Carin said. EarthRenew opened an office in Fresno, Cal., earlier this year, eyeing the expansion of its facilities on dairies and feedlots in the area between Sacramento and Bakersfield, Cal.

Carin said the company has worked with both the federal and California environmental protection agencies in introducing its environmentally friendly manure handling system.

EarthRenew's literature explains that the processing facilities are "built in modular form at a relatively low capital cost" — an average of \$12 million to \$15 million depending upon the application. "We build, own and operate our facilities, and for licensees, we provide design, integration, build and operate services."

Carin said the company will own the facilities in California and will contract with livestock operations for fresh manure to fuel the fertilizer plant.

### Cooked up in kitchen

The concept for the EarthRenew process came when Carin began experimenting with cooking horse manure in her kitchen after she had disappointing results with spreading composted manure on her field.

She tried composting the manure because, she explained, neighbors of her nearby Calgary acreage were into organic production, and "I wanted to be a good neighbor."

However, when she applied the composted manure (which she said had reached the rec-

ommended 160°F), she found that it had one big problem: weed seeds. The heat of composting apparently was not enough to kill the weed seeds, which sprouted when she applied the material to her fields.

Carin then turned to her oven and found that temperatures of up to 500°F were sufficient to solve the weed seed problem.

Next, she began to concoct how to make that work in the real world. The process came about as she worked through the design of equipment that could cook manure in an energy-efficient fashion. Using the exhaust of a gas turbine that generates electricity turned out to be the answer, even though skeptics were slow to believe that it would work, she noted.

Now, EarthRenew has grown from her kitchen to a company with 60 employees in Canada and the U.S. and a new waste disposal technology. More information is at [www.earthrenew.com](http://www.earthrenew.com). ■

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**GOOD COOK:** This diagram depicts installation of an EarthRenew unit at a typical dairy or feedlot. The system "cooks" manure into a pelleted fertilizer and produces electricity in the process, which can be sold to offset fuel costs.