

# Waste conversion

By KATHY COATNEY

**T**HE anaerobic phased solids, or APS, digester at the University of California, Davis, developed by Ruihong Zhang and colleagues, will use all the organic waste that the campus generates, which will include crop residue, livestock waste, green waste and food waste, says Dave Konwinski, CEO of Onsite Power Systems.

"We're looking at the 80 different animal facilities, and then there's just general food waste from the campus," Konwinski says.

Anything organic will be used except wood, because wood doesn't digest, Konwinski says.

Konwinski estimates the digester will process approximately 50 tons of waste a day on campus.

"They [UC Davis] want the ability to expand to reach out to the city of Davis or anyplace else for organic waste as well," Konwinski says.

"The project is moving pretty fast," Zhang says, and she estimates the digester will be complete by next summer.

The beauty of the APS digester is that it can be built large or small. Small businesses, communities and farms will be able to use the current technology, Zhang says.

Zhang envisions a future in which digesters the size of trash compactors could be installed in residential homes to generate energy the same ways as solar panels do.

## Cooperative option

Onsite Power Systems is building digesters to fit the waste stream that the facility has, Konwinski says. They are best suited for larger food-processing

## Key Points

- Campus generator will use crop, livestock, green and food waste.
- Digester is suited for large processors, cities or farm co-ops.
- Biogas can make electricity or be cleaned to transform into natural gas.

plants, communities or a cooperative of farmers.

"There is a co-op being developed near Stockton with several different growers/processors where one alone doesn't have enough [waste] to warrant putting a plant up. But collectively, they have way more than enough," Konwinski says.

"You need to have something that's more year-round, so that's why a co-op of growers might make sense. Some might have winter crops or summer crops. A lot of food-processing plants operate year-round," Konwinski says, adding that operations that only have seasonal waste aren't as viable.

The capital equipment costs necessitate that a digester operate five to six days a week year-round to really be efficient, Konwinski explains.

## Biogas

There are several options for use of the biogas.

"We could take the biogas, and we could make electricity out of it," Konwinski says. Or, it could be cleaned, made into natural gas and put back into the pipeline.

The biogas could also fire up a generator and make electricity or a fuel cell, or it could be sold to the power grid, Konwinski says.



**IT'S EXPANDABLE:** The pilot anaerobic phased solids, or APS, digester on the University of California, Davis, campus is shown here and below. The digester will use all the organic waste that the campus generates, which will include crop residue, livestock waste, green waste and food waste. It will process approximately 50 tons of waste a day on campus.

## Waste vs. power

Originally, interest in the APS digester was for power, but that has changed to waste. "With all these restrictions on landfills, and getting organic waste out of landfills, and cutting the landfills," Konwinski says, there is a greater need for waste disposal than for power.

"Right now, in Southern California, the largest landfill closes in 2013," Konwinski says, adding there will be literally thousands of tons of organic waste daily that will have to be processed or trucked out of the region.

"The city of Los Angeles has identified that if they started a food collection program, they could collect as much as 600 tons a day of food waste," Konwinski says, adding that would be enough to generate power for approximately 9,000 homes per hour.

## Biomass for wood

Glenn Nader, a UC Davis Extension livestock and natural resources farm adviser for Yuba, Sutter, and Butte counties, is on the Yuba and Butte Fire Safe councils. The councils are looking for ways to remove biomass to reduce fire fuel loads.

The problem with early biomass plants was they were built in the valley. This meant long-distance transportation, Nader says.

"In those days, because of fuel costs,

it was a 50 miles' radius that they could work; today that distance has shrunk to 30 to 35 miles."

## Not just energy

"Calaveras County is looking at making woodstove pellets and other things along with generating power," says Nader. That county is in the process of building a biofuel site, Calaveras Healthy Impact Product Solution, or CHIPS, for wood densification. Wood densification takes wood byproducts and processes them into a wood product. CHIPS plans to burn wood chips in a clean-burning biomass plant, with the byproduct that results generating energy for the operation.

Nader is hoping to do something similar in Yuba County.

*Coatney is a Corning writer.*

## News Briefs

### Foster Farms wins \$10M appeal

Livingston's Foster Farms won a \$10 million ruling in a dispute with SunTrust Bank over use of private financial information, reports the *Modesto Bee*. It began when Foster Farms bought out Zacky Farms and learned that SunTrust was doing business with Zacky, and then used Foster Farms' financial information to give Zacky a loan.

