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methane, and cattle or dairy operations together into closed-loop systems. Interest is at an all-time high.

“Right now we have joint venturers lining up,” he says. “A lot of concentrated feeding operations come to us and ask us to retrofit their facilities at E3 BioFuels’ cost, and site our facilities by existing feedlots and dairies, in order to bring them into compliance with EPA [CAFO] regulations.”

But Langley also notes it’s not for the smaller operations. “You need a minimum of 16,000 head of dairy cattle, or 20,000 head of cattle in a feedlot within a 25-mile radius, to make this work best,” he adds.

LARGER SCALE, LESS IMPACT
Closed-loop technology may allow livestock farmers to feed many more animals because they will no longer be limited by the amount of land they have in proportion to the amount of manure they must disperse, claim proponents.

“Farmers apply manure for fertilizer to the extent their manure management plan will allow,” says David Mager, vice president for Bion Environmental Technologies, another company connecting ethanol plants with livestock operations. “According to USDA, only 2% of farms have sufficient land to handle phosphorus from manure. So, 98% don’t have enough land to agronomically assimilate the manure.”

According to Bion, its technology should allow for three to five times larger herds in an economically, environmentally sustainable way. “This process eliminates the polluting releases to water and emissions to air associated with livestock,” says Mager.

LOWER COSTS

One of Langley’s most recent projects is in Mead, Neb., where his company is siting an ethanol plant and digester at a 30,000-head feedlot to produce 100% of its own energy from methane. Ethanol from the Mead feedlot will cost about 50 cents a gallon less than

at typical coal- or gas-fired plants.

“Energy efficiency is dramatically increased,” he says. “Inside the plant yard, the energy efficiency of an oil refinery is an expenditure of 1 Btu to make 3 Btu of gasoline, and the energy expenditure of a traditional ethanol plant is 1 Btu to make 2.2 Btu of ethanol. By contrast, E3 BioFuels facility expends 1 Btu to make 46.67 Btu of ethanol.

“In other words, E3 BioFuels is 15 times more efficient than producing gasoline and 22 times more efficient than producing traditional ethanol,” he adds.

Panda’s operations will generate steam to make ethanol by gasifying more than 500,000 tons of cattle manure per plant per year, making them some of the most fuel efficient ethanol refineries in the nation. By using biogas to fuel the plants, the company replaces the energy equivalent to 1,000 barrels of oil a day.

Bion is teaming with Fair Oaks Dairy, Fair Oaks, Ind., to create a closed-loop system on its 27,000-cow dairy.

“The system will create sufficient renewable energy to support 1 million gallons of ethanol for every 1,000 dairy cows,” says Mager. “Your ethanol plant becomes the feed mill for the dairy, and the dairy becomes the power plant to run the ethanol plant.

“That’s several million dollars in savings over natural gas costs normally associated with an ethanol plant.”

PROFIT MOTIVE

Could you profit from biorefineries, beyond investing in your own? Maybe. But in any case, it could pay to simply pay attention as biorefineries become more common.

Even your great-grandpa kept an eye out for new opportunities. 

For more ...

Fair Oaks Dairy www.fofarms.com
Bion Technology www.biontech.com
E3 BioFuels www.e3biofuels.com
Panda Energy www.pandaenergy.com

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Scott D. Azbell

North East Regional Sales Mgr.
Wabash, IN
260.569.1884 Office
765.506.1422 Cellular
scott_azbell@trimble.com

Rod Haarberg

Southern Regional Sales Mgr.
Franklin, TN
615.595.1873 Office
615.720.9992 Cellular
rod_haarberg@trimble.com

Rich Hilliker

Western Regional Sales Mgr.
Chehalis, WA
360.748.0596 Office
408.306.6059 Cellular
rich_hilliker@trimble.com

Matt B. Hesse

Prairie Regional Sales Mgr.
Omaha, NE
402.359.1013 Office
402.290.1119 Cellular
matt_hesse@trimble.com

Aaron Phillips

North Central Regional Sales Mgr.
Albert Lea, MN
507.377.2170 Office
651.357.2793 Cellular
aaron_phillips@trimble.com



www.autopilotgps.com