

EDGE

A publication for and about customers of RoadBuilders Machinery and Supply Co., Inc.

Featured in this issue:

MEAD CATTLE/E³ BIOFUELS Alternative fuel source from Nebraska feedlot powers an ethanol plant

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MEAD CATTLE/E³ BIOFUELS

Alternative fuel source from Nebraska feedlot powers an ethanol plant

One of the major strikes against ethanol as an energy alternative has always been the large amount of natural gas or coal it takes to produce it. At a traditional ethanol plant, it takes 1 Btu of fossil fuel to produce 2.25 Btus of ethanol, which is not an impressive net energy gain.

But a new ethanol plant that opened in Nebraska this summer solves that problem by virtually eliminating the use of fossil fuel. Instead, it uses cattle manure to power the plant.

Located in Mead, Neb., about 20 miles west of Omaha, the plant was designed, built and is owned by E³ BioFuels (E³ stands for earth, energy and environment). It's called the Genesis plant because it's the first ethanol refinery to use so-called "closed-loop"

technology, in which each part of the process feeds the next and eventually comes back to the beginning.

Here, in a nutshell, is how the "closed-loop" system works.

1. It starts with a large cattle feedlot or dairy that produces large quantities of manure.
2. The manure goes to an on-site solid-waste management facility that includes an anaerobic digester which transforms the manure into biogas (methanol).
3. The biogas (rather than natural gas or coal) is used to fuel the on-site ethanol plant.
4. A byproduct of ethanol production is wet distillers grain, which in turn is fed back to the cattle in the feedlot or dairy.

Revolutionary process

"We view this 'closed-loop system' as a revolutionary step forward in the production of ethanol," said E³ BioFuels Chairman and CEO Dennis Langley. "Compared to traditional ethanol plants, it's energy-effective (more than 20 times as effective in fossil-fuel consumption), cost-effective (production costs are lower because of much lower energy costs and on-site byproduct usage) and environmentally friendly."

The environmental benefits include eliminating the No. 1 source of water pollution (runoff from livestock operations), creating a product that produces far less air pollution than gasoline; being "carbon neutral" in terms of greenhouse gases; and reducing the amount of methane (a greenhouse gas 23 times as potent as carbon dioxide) that's released into the atmosphere.



E³ BioFuels mounts this turning attachment on its Komatsu WA320-5 wheel loader to create compost.



The compost turner attaches to the front of a Komatsu WA320-5 wheel loader. E³ BioFuels also uses the WA320 as a general machine to help out around the ethanol plant.

Cattle facilities are key

E³ BioFuels located the Genesis plant in Mead because of Mead Cattle Company, a 30,000-head feedlot that's been in operation since 1970. Mead Cattle is unique in that it has barns to protect the cattle from the elements, and has slatted concrete floors which allow the manure to fall through into a collection pit.

"Because of the existing Mead Cattle facilities, startup costs here were a little less than they would be at a feedlot without barns and slatted floors," said William "Buck" Wehrbein, Manager, Mead Cattle Company. "We were already collecting the manure and turning it into fertilizer. Now, we're turning it into biogas."

"The idea of taking manure and making energy out of it to power an ethanol plant is very exciting for all of us who work here," he added. "We feel as though we can be part of the solution to a problem that's been plaguing the country for many years."

In addition to Langley and Wehrbein, key people at E³ BioFuels include Chief Operating Officer Nage Damas, Genesis Plant Manager John Curran and Anaerobic Digester Manager Ted Mathews.

Equipment and dealer support

Both Mead Cattle Company and E³ BioFuels have turned to Komatsu and RoadBuilders Machinery for equipment to keep the operations running smoothly. Mead has two Komatsu wheel loaders (WA250-3 and WA320-5) and two Komatsu skid steer loaders (SK1026 and SK820), as well as a Schulte XH150 rotary cutter from RoadBuilders. E³ has a WA320-5 wheel loader and an SK1020 skid steer.



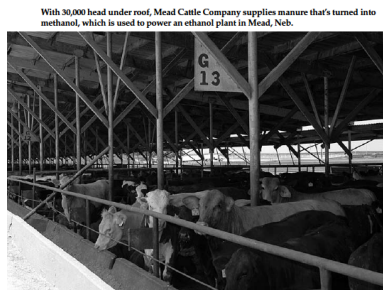
In addition to the WA320-5 owned by E³ BioFuels, Mead Cattle Company also has its own WA320-5 with a high-lift boom that it uses as a mill loader. "We think Komatsu wheel loaders are excellent and the best value on the market," said Mead Cattle Equipment Manager Dan Simen.



This Komatsu SK1026 is one of two skid steer loaders owned by Mead Cattle Company. E³ BioFuels also has a Komatsu skid steer loader.



William "Buck" Wehrbein, Manager, Mead Cattle Company



With 30,000 head under roof, Mead Cattle Company supplies manure that's turned into methanol, which is used to power an ethanol plant in Mead, Neb.

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Mead is "Ground Zero" of America's energy revolution

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"The WA250 was used when we bought it four or five years ago," said Mead Cattle Equipment Manager Dan Simon. "It replaced some units I was disappointed in, and worked great. It handled multiple tasks much better than anything else I had tried. We still use it today, and frankly, in a feedlot, it doesn't just get used, it gets abused. Despite that, it's still a very reliable and productive machine."



Mead Cattle Company Equipment Manager Dan Simon (left) appreciates the support he gets from RoadBuilders' Omaha branch and Sales Representative Gary Kratky. "RoadBuilders is the best equipment dealer I've ever worked with," said Simon. "They've supported us very well in sales, parts and service."

The E³ BioFuels ethanol refinery in Mead, Neb., is called the Genesis Plant because it's the first in the nation that employs the revolutionary "closed loop" production system, which uses cow manure to produce methanol to power the plant. At Mead, all three aspects of the production process (the manure, an anaerobic digester and the refinery itself) are at the same location.



When it came time to add a wheel loader about a year ago, Simon demo'd some other brands, but decided on the Komatsu WA320-5. "We needed a little more reach and a little more capacity than the WA250, and the WA320 has been excellent. When E³ needed a wheel loader this year, they started looking at some other stuff and I told them, they shouldn't even think about it — the WA320 is the best they're going to find and the best value, too."

As pleased as he is with the quality of the Komatsu equipment, Simon says the relationship he has and the service he gets from RoadBuilders and Sales Representative Gary Kratky are equally important to him.

"I've never had support like RoadBuilders has given us. Gary's great to work with. He stops in unannounced just to make sure things are going well with the equipment. And I really appreciate that when I call into the RoadBuilders service department, they're willing to try to help me over the phone. That kind of support saves us time and money — and RoadBuilders does it better than any equipment dealer I've ever worked with."

More "closed-loop" plants to come

The Genesis plant is the first, but according to Langley it won't be the last "closed-loop" ethanol plant in the U.S. E³ BioFuels intends to open three plants per year for the foreseeable future. Langley's hope is that ethanol will meet 25 percent of the country's liquid fuel needs by 2025, and 50 percent of the needs by 2050.

"I believe Mead, Nebraska, is 'Ground Zero' of America's energy revolution," said Langley. "What we're doing here is important. We're absolutely convinced that effectively produced ethanol can and will significantly reduce, or even eliminate, the need for foreign oil, which in turn, will improve both our national security and national economy. Our ability to do that, and at the same time help improve the environment, is a classic 'win-win' situation — and all of us at E³ BioFuels are pleased to be playing a leading role in making it happen." ■