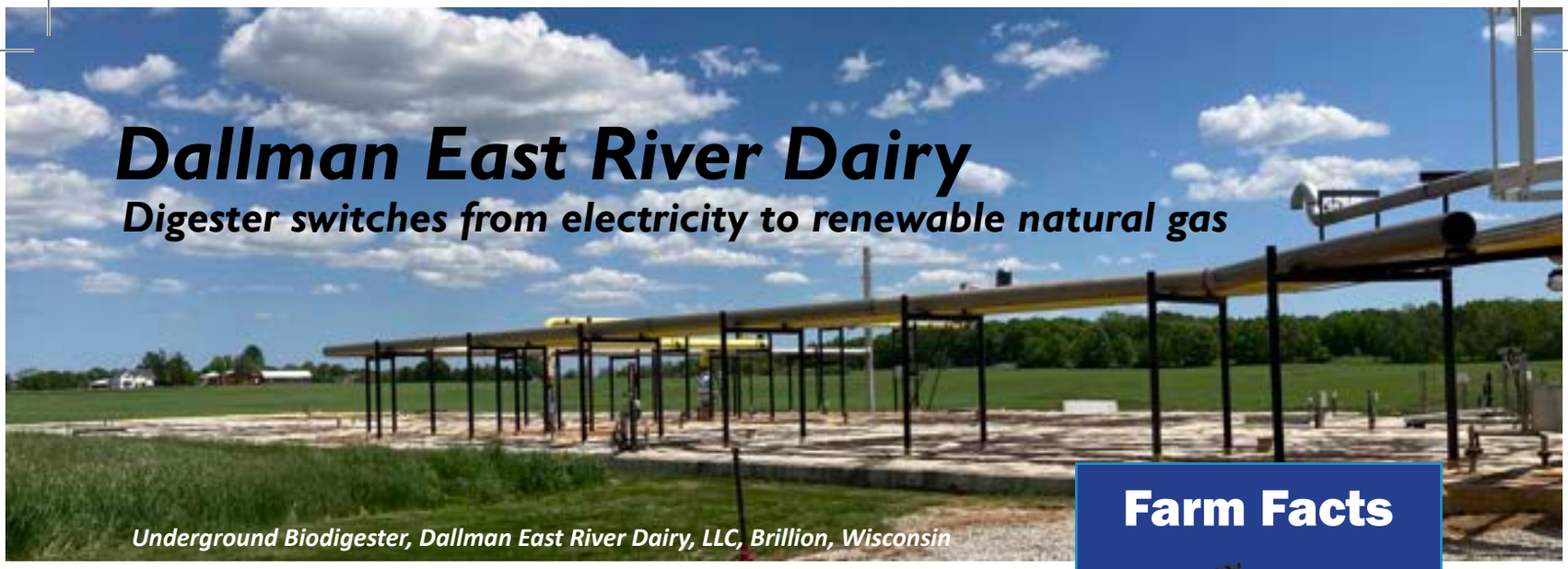
Dallman East River Dairy

Digester switches from electricity to renewable natural gas



Underground Biodigester, Dallman East River Dairy, LLC, Brillion, Wisconsin

The manure digester on Matt Dallman's farm isn't new. But the digester producing renewable natural gas (RNG) is. When talking about the switch from producing electricity to producing RNG, Dallman says "It's definitely the way to go. A lot more money to be made with RNG."

In 2012 DVO, Inc. installed the manure digester on Dallman East River Dairy to produce electricity. DVO owned and operated the digester, and sold the electricity. Producing electricity was profitable, as the utility paid 15-16 cents per kilowatt hour (kWh). "When it went down to two to three cents per kWh, there was no way," said Dallman.

After selling electricity became unprofitable, DVO sold the digester to U.S. Gain in 2019. U.S. Gain added equipment to clean and compress the biogas to create RNG. They operate and monitor the digester and sell the RNG. U.S. Gain gets a much higher price for the RNG than regular natural gas due to renewable energy credits from California's Low Carbon Fuel Standard (LCFS) in combination with the federal Renewable Fuel Standard.

"It's nice to see the methane getting used for gas [RNG] production, rather than going up in the air," Dallman said of the digester. "Using it to make more energy here in the U.S. is definitely a plus."

Farm Facts

4400 milking cows

Digestate by-product for cow bedding

Digester

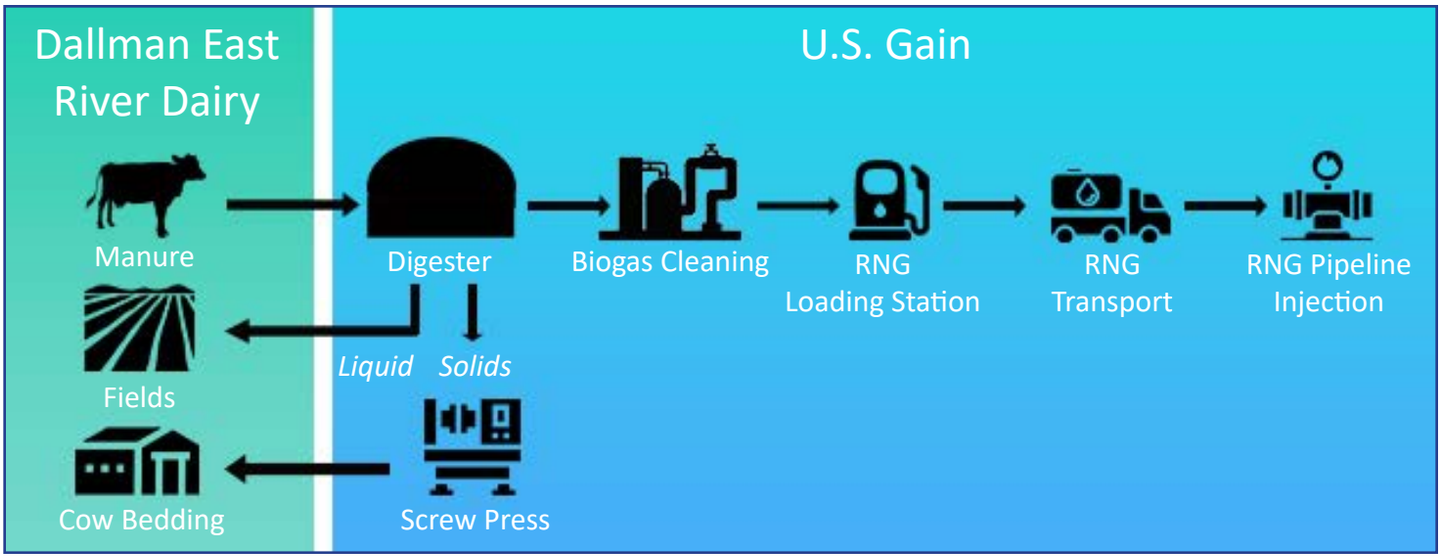
1.8 Million gallon DVO underground digester

On-site biogas purification

RNG compression and loading site

RNG production proprietary

Dallman East River Dairy cows



Dallman Farms RNG Production Process

U.S. Gain has installed monitoring equipment to track volume, temperature and more in the digester and gas cleaning equipment, allowing them to increase gas production and decrease gas contaminants. According to Pat Van Dehy, U.S. Gain's director of operations, "Dallman has continued to evolve and produce more gas at less cost over the last two years we've been operating. Gas production is growing every week here."

After the manure goes through the digester, some of it goes through a screw press separator to remove the solids so they can be used for bedding. "We use the digestate for bedding, and we do sell some of it. We sell probably 30-40% to nearby farms and use the rest of it ourselves," said Dallman. In the past, Dallman was buying sand for bedding.

The RNG from Dallman Dairy is trucked eight miles to Holsum Dairy, Elm Farm. At Holsum, the RNG from Dallman Dairy is injected into the natural gas pipeline through an interconnect installed by Holsum. RNG from two Holsum dairies with a total of 10,000 cows is also injected there.

Digester heat pump monitoring

RNG process monitoring

U.S. Gain is interested in developing more RNG projects on farms with 3000 cows or more. Clusters of farms are also of interest. Hardy Sawall, U.S. Gain RNG director of business development, shared that U.S. Gain's RNG deals with farmers range from fixed payments over the year, to sharing a percentage of the uncleaned gas plus a percentage of the LCFS credit, to a 50-50 venture.

Top: Holding Tanks for RNG awaiting transport; Left: Biodigester digestate by-product for cow bedding; Right: Transfer station to load trucks for RNG transport to injection site

The Dallman Farms RNG Production Process graphics has been designed using resources from Flaticon.com: "Cow icon by Freepik - Flaticon.com"; "Gas icons by AmethysDesign - Flaticon.com"; "Gas station by sonnycandra - Flaticon"; "Tanker truck icons by Chanut-is-industries - Flaticon.com"; Gas pipeline icons by Eucalyp - Flaticon.com"; Land icons by Vitoruler - Flaticon.com"; Press machine icons created by Freepik - Flaticon.

All photos taken at Dallman East River Dairy Farm, Brillion, WI by Karen Blaha.

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