

Ruckman Farm

Albany, Missouri

Owner: Roeslein Alternative Energy
Developer: Roeslein Alternative Energy
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Date Construction Started: 9/1/2015
Date Tank Started Being Filled: n/a, covered lagoon
Date Project was Fully Operational: 6/15/2016



Project Summary:

This project is the first of a nine part project that will upgrade Smithfield Hog Production's manure lagoons into systems that both capture the gas and upgrade it into pipeline quality renewable natural gas (RNG). Once captured, cleaned and compressed, the RNG is injected into the pipeline where it's sold for vehicle fuel and power generation to customers like Element Markets and Duke Energy. Roeslein Alternative Energy has developed, engineered, installed commissioned and managed start-up of the system plus fabrication and/or procurement of necessary process systems

What makes this project special?

A few things: 1) the scale and the marriage of a lagoon-style digester with pipeline quality renewable natural gas. At 115,000 tons per year of swine manure, this is only the first ninth of the total planned size of this project. 2) If this project can be successfully replicated, it will open up the possibility that many of the country's uncovered lagoons will begin capturing their methane and using it beneficially, like replacing fossil natural gas. 3) Covering lagoons dramatically reduces farm odors. 4) Covering lagoons keeps out rainwater to improve biogas production and eliminate the risk of a breach due to heavy rains. 5) Covering lagoons dramatically reduces the release of methane into the atmosphere.

Organizations involved: *Roeslein Alternative Energy**, *Martin Energy Group**, *Roeslein & Associates, Inc.* *Element Markets*, *Smithfield Foods*, *Duke Energy*, *Guild Associates Inc*, *J-W Power Company*, *French Gerleman*, *Polsinelli PC*, *Industrial & Environmental Concepts Inc*, *Power Solutions International*, *Cummins Engines*, *Nail Excavating & Zeeco*

Inputs and Outputs

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|-----------------------|--|
| Feedstocks: | 115,000 tons of swine manure |
| Products created: | Pipeline quality renewable natural gas, RINs |
| Digestate management: | Digestate remains in the lagoons |
| Biogas generation: | This 1st farm has been modeled to produce 250,000 MMBtu a year or roughly 1.9 million diesel gallon equivalents (DGEs) |

Finances, Beneficiaries, and Expansion

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| Project financing: | The project was financed through private equity from Roeslein Alternative Energy's owner Rudi Roeslein |
| Customer(s): | Private vehicle fleet, Duke Energy, Element Markets |
| Long term/Expansion plans? | This is the first of nine farms to be completed. Once all nine farms are operational we will produce approximately 2.2 billion cubic feet of pipeline quality RNG, or the equivalent of 17 million gallons of diesel fuel annually. Our second initiative is set to provide an economic incentive to convert highly erodible or marginal land to environmentally beneficial prairie. We are developing a mixture of native grasses and plants that provide ecological services, wildlife habitat and biomass that will be co-digested with manure to create biogas. We hope to demonstrate the concept on a small scale at Ruckman and move it to other farms and eventually across the Midwest |

Photos

