

Visionary Rudi Roeslein Could Reshape the Rural World

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Conservation Editor

Prairie restoration, renewable natural gas (RNG) and large-scale hog farming. What a trio of apparently unrelated topics!

Rudi Roeslein (*pronounced race-line*) has a vision that weaves them together into real-world solutions to daunting conservation, ecological and agricultural problems, with significant direct benefits for wildlife. He's no wavy-hands dreamer, he's a doer, and is already well along the way.

In 1990 he founded Missouri-based Roeslein & Associates, Inc., an innovative global engineering and modular fabrication company. In 2012 he spun off Roeslein

Alternative Energies (RAE) to carry out his conservation vision, which revolutionizes waste management at Concentrated Animal Feeding Operations (CAFO), addresses environmental concerns on a broad scale, and aims to restore 30 million acres of native prairie in the U.S.

Roeslein's plan is broken down into steps. The first, called Horizon 1, involves a partnership with Smithfield Foods, the world's largest hog farmer and pork processor. RAE has developed a system that is now in production, producing clean RNG via the anaerobic digestion of hog waste. By 2021, all Smithfield properties in Missouri are expected to be in full production.

Roeslein recently hosted a

media tour of his north Missouri operations, demonstrating a live RNG facility at a Smithfield hog farm. It was eye-opening.

STARTING AT WASTE LAGOONS

The system starts with the traditional waste lagoons already in place at every large-scale hog production facility. He covers them with an impermeable membrane which captures all of the gas produced by the anaerobic decomposition. The gas is piped to a modular facility on the farm, which converts it from mostly methane into 99 percent pure natural gas.

The gas is then pumped at high pressure into specially designed trucks, which transport it to a nearby port in the natural gas pipeline grid system. The system works and is in full commercial production now.

It is great to turn a former liability into a very green asset, but an even bigger impact on the environment is that all that methane is kept out of the atmosphere.

Another huge advantage is that the impermeable covers prevent rainwater from entering the lagoons, avoiding the need for costly treatment and

eliminating the risk that high-rainfall events will overcome the capacity of those systems and risk polluting nearby surface and ground water.

Large hog operations have a well-earned reputation for being a source of odor. Traditional manure lagoons are open, thus releasing all of the methane – a greenhouse gas about 25 times more potent than carbon dioxide. They do not smell very good at all. Covering them up, the RAE process all but eliminates that source of odor.

Horizon 2, which is at an advanced development stage in cooperation with several technology providers and university researchers, involves converting highly erodible or marginally productive lands from row crops to native prairie plantings.

GOOD FOR SOIL AND WILDLIFE

This produces tremendous benefits for pollinators and wildlife. It also stabilizes the soil, prevents erosion and absorbs fertilizer runoff, keeping agricultural nutrients out of surface waters. And it helps to recharge the groundwater supplies.

Smithfield is also on board



Rudi Roeslein's vision is to turn hog waste into useable natural gas.

with Horizon 2, having a joint venture with Roeslein called Monarch Bioenergy. They have contributed \$300,000 to fund the planting of monarch-friendly native milkweed and wildflower species on 1,000 acres near their northern Missouri hog farms.

In the prairie states, most land suitable for native prairie restoration is privately owned, and most likely in agricultural production. Farmers respect their land, but farming is not a hobby. It has to pay. Feel-good solutions that eat away at their meager profits will never get off the ground.

ALL ABOUT MAKING SENSE

Prairie plant biomass holds real promise as another material to be anaerobically digested for natural gas production. The research and development under way is focused on developing processes that will create enough of a market for those materials to make economic sense to farmers to participate.

Roeslein is committed to finding solutions to environmental problems that make economic sense. *To learn more about RAE and the Monarch Bioenergy, go online to roesleinalternativenergy.com.*



The process starts with traditional waste lagoons on the farm.
— RAE photos