



A Tech Top 50 Company

For Immediate Release
February 14, 2003

Contact: Innoventor, Inc.
(314) 785-0900
solutions@innoventor.net

Innoventor, Inc. Looks for Partners For A Swine Waste to Energy Pilot Program

Maryland Heights, Missouri - Hog confinements help bring us cheap and plentiful supply of pork. Most Americans love to wake up to the aroma of frying bacon. Unfortunately hog confinements also bring us a lot of other aromas. In addition to the odor, there are growing environmental concerns associated with the common disposal method of manure, land application, including runoff into water bodies. A potential project in the Pike Co. IL area may help bring about a solution to this and other problems and Innoventor, Inc., a St. Louis engineering company, is looking for a partner in this project.

Swine manure is rich in energy. The average energy content is about 6500Btu/lb, which is nearly as much as wood. Some farmers and companies have been trying to recover some of this energy. The most popular method is called anaerobic digestion. This process consists of keeping limiting the manure's exposure to oxygen, and allowing bacteria to break the manure down into methane, also producing carbon dioxide. The methane can then be used as fuel to run a generator.

Another method that has been studied is aerobic digestion, where the manure is exposed to oxygen. One drawback to this method is the undesirable production of ammonia. Both methods of digestion use the process of nature in breaking down the manure. Methane is produced whether or not a digester is used. Methane (CH₄) is classified as a greenhouse gas that contributes to global warming. Methane's greenhouse effect is 20 times that of the same amount of carbon dioxide (CO₂), though CO₂ captures much more attention than methane in the greenhouse debate primarily due to the greater amount of CO₂ generated. There have been some dairy operations which have had success with anaerobic digestion. However success has been very limited with swine manure due to different properties of the manure. Existing technology requires significant labor and attention from the farmer. A well-designed digester system can recover roughly half of the energy available in the raw manure.

Kent Schien, president and CEO of Innoventor, Inc. and Yuanhui Zhang, a professor of the University of Illinois, are working on a new approach that will not have some of the shortcomings of anaerobic digesters. Prof. Zhang has performed successful laboratory experiments with a process called thermochemical conversion (TCC). This process puts the manure under high pressure (about 1500 psig) and temperature (about 570°F), injects a gas such as carbon monoxide, and converts the manure into a fuel oil similar to that which can be derived from other biomass sources. There is also a small amount of solids residue produced, which may have some value as a fertilizer. This process can convert up to 80% of the available energy into oil. The primary challenges now faced are in applying this process to a large-scale continuous-flow farm operation, which requires an inexpensive and reliable system. Also there may be some amount of further processing of the fuel required, depending on the usage. The resulting fuel can either be used in place of diesel used to run farm equipment, or run a generator to produce power.

A second technology that IEI is working on is gasification. This is a similar process to TCC, except it uses lower pressure and the resulting fuel is a gas. This gas is used to directly fire a generator to produce power. Initial testing shows about 65-70% efficiency in capturing the available energy.

A large operation or group of small operations may produce about 1 megawatt, enough power to address the swine operator's needs, plus sell a large excess to the local utility. The IL legislature is currently considering a Renewable Portfolio Standard (RPS) that requires utilities to get a certain percentage of their power from renewable sources. This and other incentives will help make this renewable energy resource even more valuable.

A third hog operation technology that Innoventor has already developed is the patented Air Scrubber. This technology attaches to exhaust fans on hog confinements and captures particulate matter, the odor carrying agents, before it exits outside.

Schien's next step is to incorporate these technologies into a pilot project in the Pike Co. area. If successful, the technology will be copied at other farms. These technologies have potential of solving much of the odor and swine waste disposal issues, provide another income source for farmers, help make the nation more energy independent, and help bring some construction and other jobs to the local economy. It may help local residents breathe a little easier in more ways than one.

St. Louis-based Innoventor, Inc. is a family of high-tech companies providing process, design and manufacturing solutions in agriculture, aerospace, pharmaceutical/medical, food/beverage, industrial automation and power industries.

###

