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Tired of the Same Old Manure Pile Up - Turning Manure into Energy is Now Possible for All Sizes of Horse Farms

Clay Nelson

It's an age-old problem for horse owners: what to do with the never-ending pile of manure your horses create. For many, the solution has been to compost the manure, turning it into an organic rich soil that can be reapplied to your pasture or garden.

This is, and will continue to be, a cost-effective and environmentally-friendly way to manage your manure. No longer, however, is it the only "green" option.

Converting horse manure into energy is now a realistic alternative for small horse farms. While there are a number of different technologies that have been utilized to convert manure into energy, including anaerobic digestion, gasification, incineration, and heat extraction, only a few of these are currently feasible for small farms. In this article, we discuss one such technology and an exciting new product that has just hit the market.

A manufacturer of renewable energy micro generation systems has recently developed a self-contained anaerobic digester they call the "Muckbuster" that converts horse manure and bedding into energy, mulch, and fertilizer.

What is an anaerobic digester? An anaerobic digester breaks down organic matter (like manure and bedding) in the absence of oxygen. In the process, methane (called "biogas") is produced, captured, cleaned up, and used like natural gas to power a combined heat and power (CHP) unit.

What's unique about the Muckbuster? Traditionally, anaerobic digesters were only feasible for large livestock operations. To our knowledge, the Muckbuster is the first "small-scale" anaerobic digester system designed for smaller horse farm operations.

How much energy can I generate and what are the costs? According to a brochure provided by the manufacturer, a Muckbuster sized to process 200 liters of manure and bedding per day (about 4 horses worth) generates about 7,148 Kilowatt hours (kWh's) of energy annually and costs about \$28,000. A 2000 liter unit that services ~ 35 horses costs about \$175,000. While energy generation numbers weren't explicitly provided for the larger unit, it should generate about 10 times the energy, or 71,480 kWh's per year. Intermediate-sized units are also available, and additional capacity over 2000 liters can be purchased for a set fee of about \$12,000 per 200 liters. For reference purposes, according to the U.S. Energy Information Administration the average US house used about 11,000 kWh's of energy in 2007.

Tax rebates may also help reduce costs. Return-on-investment is reported to be as little as six years, though this is probably a very optimistic estimate.

Can I sell unused electricity back to the power company? Net metering, in which you measure how much energy you are generating versus how much you are using, should be a viable option so long as you can tie into your local energy grid. Check with your local utility provider to find out specifics about net metering options in your area, including current energy purchase rates, as these vary by state and utility provider. In most cases, you should be able to receive cash for any unused energy sold back to the power company, but, in some instances, you may only be able to receive credits for future energy use.

What factors should I consider when determining if a small-scale anaerobic digester is right for me? Each farm's situation is unique, so there is no "one size fits all" answer to this question. These units require a significant up-front investment. Because this is the first generation of small-scale anaerobic digesters, issues such as reliability and maintenance costs are somewhat uncertain.



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The benefits of using a small-scale anaerobic digester, however, are substantial. In the long-term, these systems are likely to provide significant cost savings. They also have tremendous value from an environmental perspective, as they will reduce your dependence on polluting, non-renewable forms of energy. Additionally, they make manure management easy, thereby helping to protect water quality of nearby streams and rivers, as well as your farm's groundwater resources. These systems are also very beneficial from a resource reuse perspective, as the by-products are fertilizer which can be used in your garden, and mulch which can be used as bedding in stalls or footing in paddocks.

Where can I learn more? You can find out more about the Muckbuster online at www.seabenergy.com.

In the next article, coming soon, we will discuss incineration, another manure-to-energy technology feasible for smaller horse farms.

Clay Nelson is co-developer of Sustainable Stables, an organization of environmental professionals that conducts research and provides information and consulting on eco-friendly horsekeeping. Visit Sustainable Stables online at www.sustainablestables.com or email Clay at clay@sustainablestables.com.

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