Subject: How Horse Manure Is Transforming Renewable Energy
Posted by keith1186 on Mon, 05 Aug 2024 17:21:27 GMT
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How Does Manure Connect to Renewable Energy?
Animal manure contains organic matter like bacteria. It comes from the natural materials each animal eats in addition to professionally produced feed with probiotics. As the bacteria process food in the digestive system, they create gasses.

Even without modern technology, gasses emitted from manure and its chemical composition make it a reliable fuel source. People have used manure to generate heat for thousands of years by adding it to fuel sources like firewood.

The live organic matter makes manure an additional renewable energy resource with green electricity advancements. Modern tech utilizes the gasses and the manure's heat absorbance properties to create green electricity.

Animals will always need to process food into waste, so it's a naturally recurring material people can count on. Those relying on it will never deprive the environment of a limited resource or force the animals into a lifestyle that doesn't already come naturally to them.

What Kinds of Manure Create Sustainable Energy?
People can use livestock manure to generate sustainable electricity, but cows aren't the only animals that can contribute to this process. Horse farms are also reliable sources of manure. Horses only need 45–72 hours to digest food and create waste, so they're an excellent option for industries seeking manure-supplied energy.

The average horse makes around 27 kilograms of manure or 60 pounds of waste daily. A dairy cow only makes around 18 gallons of wet manure in the same period. Dryness is the key to making manure more effective as a power source, so horse waste is preferable. Horses may also have access to more nutritious feed in their stables than cows grazing in fields, leading to more nutrient-dense manure for power production.

Tech That Creates This Green Electricity
Using manure to start a fire is much different than turning it into electricity. These are the latest technologies that convert horse or livestock waste into energy. If they become more accessible, this sustainable power source could become more commonplace.

Anaerobic Digester
Anaerobic digestion happens whenever bacteria break down organic matter for a living organism's digestive system. People and animals both engage in this natural digestion process. When waste accumulates, it contains methanogens that create methane gas from the fermented organic matter in the waste.

Digester machines are the tech version of a digestive system. People dump fresh manure into them for anaerobic processing. As the machine maintains the proper temperature for the process to continue, it also harvests the methane emitted from the methanogens. The gas can then turn into liquid fuel for gas turbine engines.

Biomass Boilers

Some power plants use biomass boilers to generate steam from manure moisture, air and direct combustion. The methane from the manure aids the combustion, leading to more steam. The steam transfers through additional machinery, pushing turbine drive blades to generate electricity before dissipating.

Although this energy source isn't commonplace, it still helps communities. When the Helsinki International Horse Show happened in 2019, it shocked the world by running on horse manure electricity from a nearby power plant. The organization's workers sent manure from the show's horses to the plant, which used biomass boilers to create power. The energy ran the multi-day show and made international news due to where the electricity came from.

Where Horse Manure Energy Would Integrate Most Easily

Green energy technology often only works in specific places. Just like you need sunny weather for solar panels, you'll need numerous horses to create significant amounts of electricity. These are a few locations where this form of renewable energy would work best.

Towns With Horse Farms

Towns and cities with multiple horse farms would easily adapt to manure processing plants. The farm owners could transport their property's daily manure collection to the facilities or arrange recurring pickup services, like with garbage trucks.

If you're not from a place with farmland, it might not seem like there are locations like this for power production. However, horse farms tend to form around each other wherever there's suitable land and nice weather. A place like Ocala, Florida — also known as the horse capital of the world — would benefit greatly due to its 300-acre equestrian facility and the many horses housed within it. If a nearby power plant utilized manure from that town, it could send sustainable electricity to nearby neighborhoods year-round.

Manufacturing Facilities Close to Farms

Large manufacturing facilities use significant amounts of power. The U.S. industrial sector used 265.8 trillion British thermal units in February alone. If biomass boilers started producing energy near those facilities, it could significantly reduce the U.S.'s carbon footprint.

The facilities would likely have to be near farmlands, so it wouldn't be practical throughout the country, but it's another great option for sustainable electricity. Areas without typically sunny weather or significant wind gusts could rely on horse manure to make large manufacturing plants more eco-friendly.

Horse-Centric Businesses

Horses don't just exist as gorgeous farm animals or show jumpers. They also support numerous types of businesses that could create their own energy with manure.

Riding schools, equine therapy services, rehab boarding farms and other small businesses rely on horses to remain open to the public. If they got the technology to transform each horse's manure into green power for their property, it could make more people inclined to go green. They already need a method to dispose of the waste. Biomass conductors are a great option to

consider besides using it as compost or mulching material.

A Sustainable Future Requires Creative Resources

Existing green energy technologies are great, but more people will gain access to sustainable electricity if they have additional options. Horse manure is a long-trusted biomass material perfect for creating power with combustion or methane collection. If more people learn about its full potential, it could revolutionize the modern push for green resources.
