Poo to power

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MSU turns zoo waste into clean energy

Michigan State University has created a green solution for the problem of what to do with animal and food waste at the Detroit Zoo.

Dana Kirk, assistant professor of biosystems and agricultural engineering, and his team worked with the Detroit Zoo to build the first anaerobic digester at a zoo in North America, creating clean energy capable of powering some of the zoo’s operations. You might say, they’re turning poo into power.

An anaerobic digester is a sealed tank, deprived of oxygen, in which organic waste is degraded at a high temperature. This allows waste material to decompose quickly and produce methane that can be captured and converted to electricity.

An animated video was created to show audiences of all ages how energy gets created inside the anaerobic digester: Poo to Power - How MSU turns zoo waste into clean energy

The Detroit Zoo digester powers its animal hospital, which operates at 100-150 kilowatts per hour. For reference, a typical household in the United States uses about 900 kilowatts of electricity per
month. In addition to helping reduce electricity costs, benefits include repurposing animal and food waste and reducing greenhouse gases.

MSU is recognized internationally for its experience and expertise in anaerobic digester research and development. Kirk, an assistant professor of biosystems and agricultural engineering and manager of MSU's Anaerobic Digestion Research and Education Center, has lent his expertise and served as the technical lead on a digester in Costa Rica, as well as the digester that powers part of MSU's south campus. In addition, he has provided training for professionals from a number of African and Asian countries.

“Over the span of more than eight years, we have worked with hundreds of clients around the United States to understand how much energy can be produced from organic wastes,” says Kirk. “We also have helped stakeholders evaluate technologies, troubleshoot underperforming systems, design and construct pilot digester platforms, and conduct feasibility studies.”

While there are an estimated 40 to 60 million anaerobic digesters worldwide, just more than 1,500 are located in the United States. That number is expected to grow as digesters like the one at the Detroit Zoo come online.

With more than 1.5 million visitors annually, the zoo is helping more people learn about the value of digesters in creating clean energy from readily available resources.

Related Website: Story courtesy of MSUToday. Communications contact: Patricia Mroczek

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