

RECOVERING ENERGY FROM TRASH TO MAKE ELECTRICITY



In many ways, Kinross Charter Township, located in the beautiful eastern Upper Peninsula of Michigan, is no ordinary community. Its source of employment, Kincheloe Air Force Base closed four decades ago, leaving Township officials on their own to convert the military base into a civilian community.

Officials at Kinross have learned to be resourceful to make ends meet. It's become a way of life. Over the years, Kinross officials have been very frugal – operating their public utility like a business – with competitive water and sewer rate charges that not only provide service but set aside funds for future improvements.

Township officials have worked with Fleis & VandenBrink (F&V) over last decade to evaluate options of recovering energy from waste. The idea of squeezing energy out of trash was explored in conjunction with digester upgrades at the plant because so much energy is just tossed out with the garbage.

Research showed there was plenty of waste energy available in the trash generated around Kinross. And much of that trash gets hauled a great distance to be disposed in a landfill.

A local trash hauler is currently working with F&V to determine the energy content of the garbage, including the juicy stuff. Equipment to squeeze energy out of the trash will be selected and matched with the anaerobic digester improvements at the wastewater plant to make good use of the new source of energy.

The anaerobic digester facility in Kinross, which had been operating for many years, was recently updated and expanded to receive not only the WWTP biosolids, but also about 20-times more waste energy value from squeezing the trash.

"I'm used to people telling me 'No, that can't be done,' in a small community like ours. But what they're really telling me is that it can't be done the normal way they do it," said Rick Bernhardt, who serves on the Township's water and sewer advisory committee.

The food waste will be hauled to a processing building at the wastewater treatment plant to extract the high energy material to be fed to the digester. In the digester, the volume of the waste is reduced producing biogas. The biogas is then used to fuel generators to produce electricity.

BEST SOURCE COMES FROM SQUEEZING THE 'JUICE' OUT

Trash-squeezing equipment is available today that pierces, drains, and compacts the containers. It separates drained trash from the liquids which has the most energy. The best way to be the most efficient is to cherry-pick the best energy-containing trash.

Getting a hold of the green waste collection containers used by commercial and larger accounts is one way to get the best trash. Kinross is making agreements with restaurants, the local hospital, schools, large groceries, and mega stores to pick up their segregated green garbage twice weekly.

The grease, expired packaged food and cartons of milk – high strength biodegradable wet garbage – is the trash of choice. However, much of that garbage is in containers that need to be emptied. That's where the equipment takes over. One part-time employee can feed the equipment, with liquid stockpiled in a tank to feed the digester and generate energy for the rest of the day.



OPTIMIZING DIGESTERS CAN LEAD TO 'NET ZERO ENERGY'

The exciting goal in Kinross is to achieve "Net Zero Energy" – produce enough energy to support the wastewater treatment plant and possibly, to feed electricity into the electric grid. Kinross will initially reduce their electrical costs by recovering energy from the waste. Eventually with more agreements for high energy waste in place, it could produce more energy than it uses.

"We're not looking at selling any energy back to the grid, we just want to be independent of the grid and the use of fossil fuels," Bernhardt added. "Being green is just a side benefit from what made sense from a fiscal point of view.

"If we can save money on operations and generate another income stream, we can beat inflation and keep our low water and sewer rates."

If you would like to know more about the current state of the art in recovery of energy at your facility, contact F&V's Jeff Pugh at 616.977.1000 to see how we convert waste energy into usable energy with microbes that work reliably every day.

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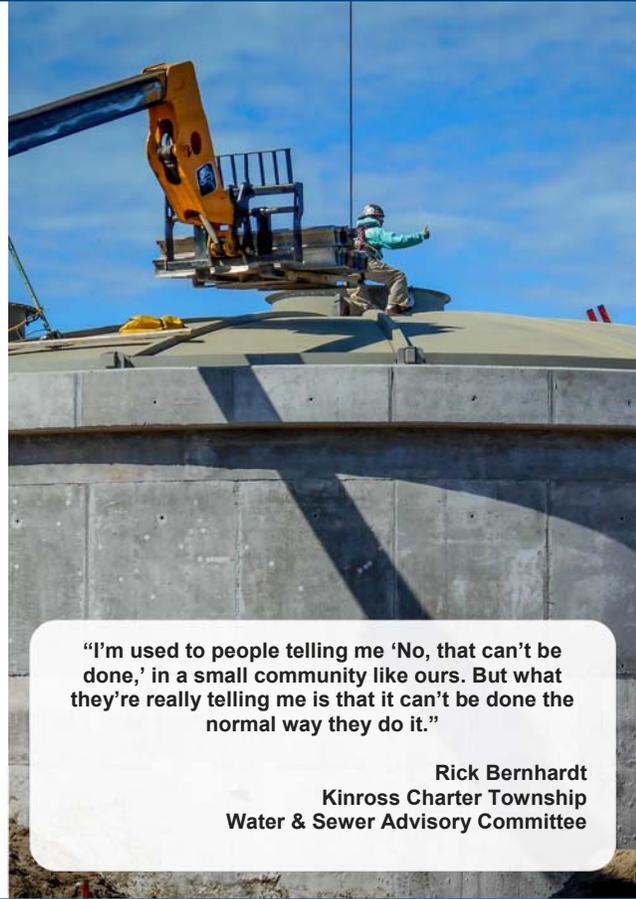
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Rick Bernhardt
Kinross Charter Township
Water & Sewer Advisory Committee

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