

Grinder Keeps Farm's Waste-to-Energy Facility Profitable

Reynolds, Indiana

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Handling difficult liquids, such as sludge or fluids laden with solids in waste-to-energy operations presents a challenge that can impact the entire system if left untreated. When flow is interrupted by debris or large solids blocking a pump or pipeline, the waste-to-energy conversion process can break down within seconds — and the time and cost to deal with a complete clean-out, shutdown and restart can be astronomical.

Thankfully, this situation can easily be avoided. Many facilities that process difficult liquid/solid combinations now rely upon powerful dual-shafted grinders to deal with debris and ensure continuous operations. BioTown Ag in Reynolds, Indiana was one such agricultural waste-to-energy operation that faced frequent shutdowns from undesirable solids and came to JWC for a solution.

BioTown Ag represents the future of sustainable farming. This technology-driven, environmentally-conscious farm focuses on eliminating the impact from past agricultural practices by exploring new frontiers in food production.

To meet their sustainability goals, BioTown Ag incorporated an anaerobic food waste and manure digester to convert waste into energy, fertilizer and soil. Optimizing the efficiency of the digester requires more organic material than what the farm produces, so BioTown Ag accepts organic by-products from neighboring industries. This solution is a win-win for all parties — local companies have a greener disposal option for

CUSTOMER: BioTown Ag

PROBLEM: Debris in feedstock for Waste-to-Energy operation clog chopper pumps

SOLUTION: Monster Industrial 3-HYDRO-IX

their food waste, and BioTown Ag is able to keep their digester running at peak efficiency.

The methane gas produced by the digester is used to power the farm's three generators, while the fertilizer and soil that the digester produces are used on-site or sold locally. Each year, BioTown Ag reduces CO₂ emissions by 44,000 tons, landfill waste by 128,000 tons and wastewater by 36.5 million gallons. As stated earlier, incorporating this digester within their farming operation provides a host of benefits that ripple out into the community — local businesses have a sustainable disposal option for their organic waste, and the extra energy the farm doesn't use is sold back to the power grid. It's crucial that waste material flows uninhibited through the system because any downtime due to equipment failure can hurt the economics of this sustainability model.

Within the digester are chopper pumps that keep manure, organic waste and water flowing throughout the closed-loop process. Smaller solids can pass through the pumps without causing clogs, but if larger pieces of debris are left untreated, the whole system comes to a halt — which is exactly the problem workers at BioTown Ag were experiencing.



Since its founding in 1973, JWC Environmental has become a world leader in solids reduction and removal for the wastewater industry with its Muffin Monster grinders and Monster Separation Systems for screening, compaction and washing. JWC also solves challenging size reduction and processing problems in commercial and industrial applications through its Monster Industrial division. JWC Environmental is headquartered in Costa Mesa, California, and has a global network of representatives, distributors and regional service centers to provide customer support. For more information, visit JWC Environmental at www.jwce.com.

Along with the organic waste that is put in the digester, items like water bottles, wood and rock can end up in the feedstock mix during transport. Those items easily clog pipelines and pumps, and operators are required to manually unclog the chopper pumps to get the system running again. At BioTown Ag, these clogs within the chopper pumps were occurring every few days, which required a complete shutdown of the digester. The clean-out and rebuild tasks associate with getting the digester running again were both unpleasant and potentially hazardous.

After conducting research on available solutions, BioTown Ag purchased a 3-HYDRO-IX dual-shafted grinder from the Monster Industrial division of JWC. The grinder was installed into the pipeline that flows into the feedstock mixing tank. Since the installation, the BioTown Ag maintenance crew hasn't had to manually unclog the pumps, and the farm has purchased a second Monster grinder to keep up with increased capacity.

Dual-shafted grinders employ low-speed, high-torque grinding to breakdown the troublesome solids. This approach has been found to be extremely effective in dealing with the wide variety of solids the can be found in waste streams, including stringy rags, tough stones and other inorganic materials.

Systems that utilize high speed cutting blades, such as macerators or chopper pumps, cannot deliver the same cutting force as dual-shafted grinders. The high speed cutting systems tend to become clogged with stringy material or get damaged by hard solids or waste streams with moderate grit.

Dual-shafted grinders were originally developed for wastewater treatment, including sludge pumping. Since then, these grinders have been installed in a variety of applications beyond wastewater, such as manure, food waste and biofuels processing.

Sludge handling and debris reduction is just the beginning of what a dual-shafted grinder is capable of. Those running a waste-to-energy business have a lot on their mind — worrying about pump and pipeline clogs shouldn't be one of those things. Using an intelligently-designed, capable Monster Industrial grinder from JWC Environmental will help business owners shred waste into profits, and keep their waste-to-energy operation running smoothly.

