

JWC Shredder streamlines organic waste processing at the Akron Zoo

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With a little more than 700 animals representing over 90 different species, and situated on 50 acres, the Akron Zoo in Akron, Ohio is considered a small zoo by size. But this zoo is anything but small in accomplishments. Founded in the early 1900s the zoo became one of the first zoos in the country to privatize and become a non-profit organization under the supervision of its Board of Directors. One of the Board's primary mandates was the development of sustainability initiatives throughout all aspects of the zoo's operations.

Focus on sustainability

The Akron zoo has an impressive history implementing sustainability programs. In 2005, the zoo unveiled Komodo Kingdom Education Center which utilized sixty-three 350-foot deep thermal wells under the building tapping for energy efficient heating and cooling. In 2011 the zoo installed 10.3 kilowatts of solar arrays to support the park train as well as additional electrical needs at the facility. They have also significantly reduced domestic water consumption at the park through the use of low flow fixtures and designing water treatment systems that allow for 100 percent reuse of water within park exhibits.

Big Hanna, Akron Zoo's zero-waste facility

"The Akron Zoo has a sustainability plan, with nine aspirational goals," said Christopher E. Norman, Director of Capital Projects and Sustainability, for Akron Zoo. "One of those goals is to be a zero-waste facility." Through recycling efforts, the zoo has diverted approximately 3.6 million pounds of organic waste from landfills since 2011. But Big Hanna is the latest investment to take its organic waste management to a new level.

In 2015, the zoo evaluated what to do with its organic waste – specifically its carnivore manure, food waste, animal bedding and compostable food service products. "We worked with the Summit

PROBLEM: *Straw and uncooked produce causing problems with digester in-feed*

SOLUTION: *4-SHRED organic waste grinder*

County Solid Waste District in Akron to help us evaluate solutions for our organic waste besides depositing it in a landfill," continued Norman. "Through Summit we discovered a system called Big Hanna which processes organic waste into compost."

Big Hanna is the brand name for an enclosed in-vessel aerobic composter. Organic waste, such as meat, wood, proteins and animal manure can be input into one end, then slowly over a period of 4 – 6 weeks rotated via auger through the vessel, which then dispenses the organic material as compost. The zoo selected a model T480 Big Hanna digester capable of processing 750 pounds of organic waste per day.

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Straw and raw food challenge Big Hanna

The content of the zoo's waste included straw for bedding which posed issues with in-feed into Big Hanna. Also, the unit was designed for processing food that had been cooked, rather than raw food, such as what is fed to the zoo's animals. During pre-testing of the system, it was determined that the solution for both issues could be resolved with shredding of the organic material prior to input into Big Hanna.



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 Santa Ana, 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.



“After some research into shredders, we knew we needed a machine that could not only cut up straw and raw food, but also handle animal manure, and compostable cups, plates, forks and spoons that we use as part of our food service operations,” said Norman. “We decided on a high-performance, 25 horsepower, dual-shafted industrial grinder, manufactured by JWC Environmental, which easily shreds all of this material to less than one inch in size.”

With the addition of the grinder, all the solid waste is ground down to a small size, increasing efficiency of the composting system by increasing surface area. The consistently small size of the shredded materials also resolved the in-feed problems posed by straw in the bedding.

Monster Industrial Rep designs turnkey system

JWC Environmental’s local Ohio representative, Buckeye Pumps, Inc., was brought in to not only assess the zoo’s shredding requirements, but also to help design a turnkey system for receipt of organic material into the shredder and conveying of the shredded material into Big Hanna.

“In addition to specifying and supplying the grinder, we also designed and built a system that permitted the zoo’s Cushman utility vehicles to back up and deposit their loads of organic material into a hopper which fed into the grinder,” said Greg Mueller, an Account Manager for Buckeye Pumps. “Then we developed an auger conveyor which transported the shredded material into the in-feed of Big Hanna.”

“The JWC Environmental grinder itself is quite powerful and reliable” added Mueller. “With its dual-shafts operating at slow-speed and high torque it can quickly grind the zoo’s material down to the required size more efficiently than single-shafted machines and macerators.”

“The grinder is a critical element for the efficient functioning of Big Hanna”

The 4-SHRED-1 grinder has two rows of sharp, 11-tooth hardened-steel cutters that rotate slowly. Strong shafts and heavy-duty seals allowing shredding of even the toughest solids. Integrated steel scrapers increase throughput and help the cutters clean out quickly.

“The grinder is a critical element for the efficient functioning of Big Hanna,” said Norman. “We can now compost our carnivore waste and our food service compostable items. These were going into the landfill before the grinders and Big Hanna.”

With installation finalized in early 2018, the Big Hanna composting installation at the Akron Zoo has the capacity for the zoo to divert up to 136 tons of organic waste annually from landfills.

