

Monster Grinder Stops System Clogs & Keeps Biomass Conversion Process Flowing

**MONSTER
INDUSTRIAL**

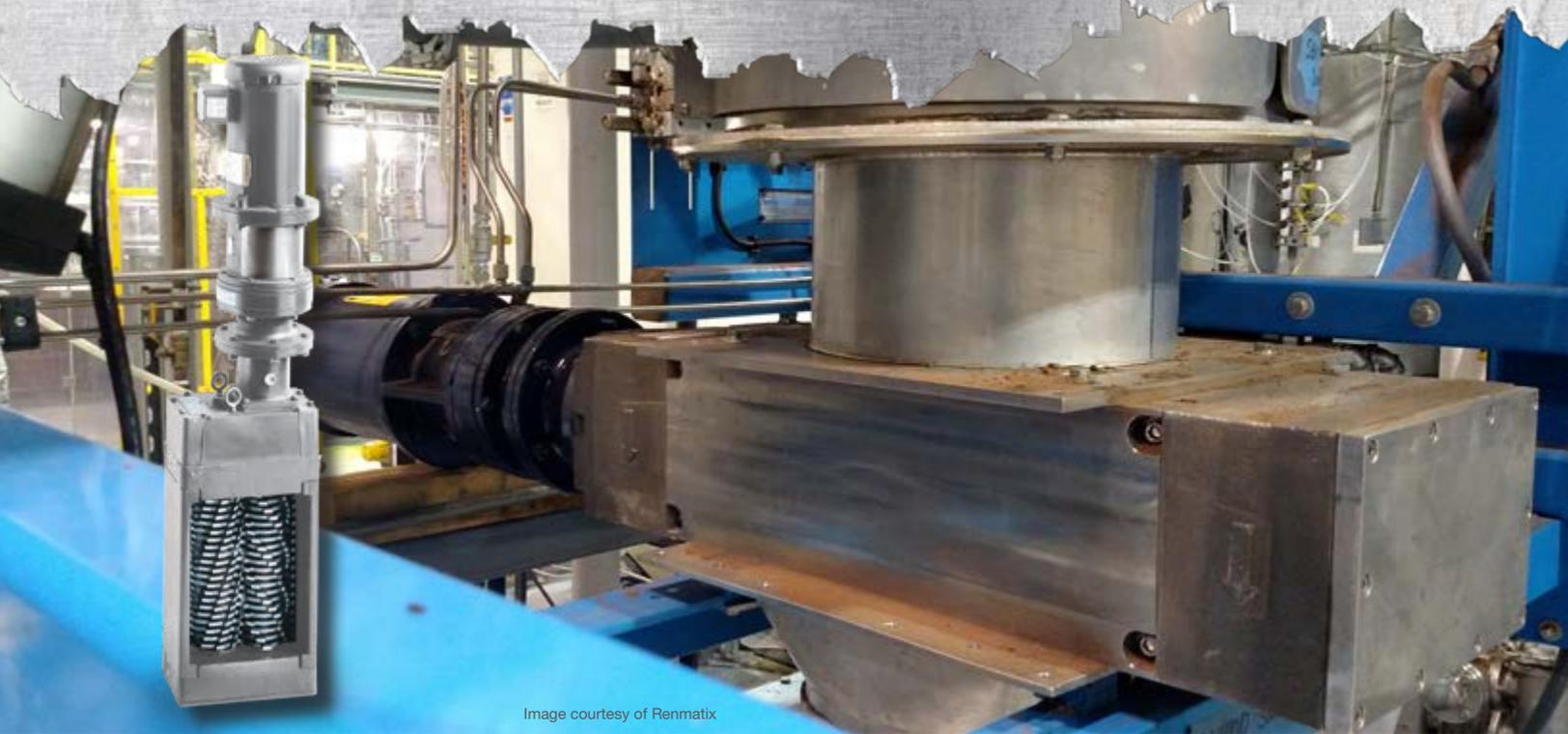


Image courtesy of Renmatix

Turning wood chips into a valuable industrial chemical might seem like a magic trick, but a firm in Pennsylvania is proving it can be done. Renmatix developed a patented process to quickly turn woody biomass into industrial sugars. The sugars are used as building blocks for more valuable industrial chemicals and lubricants.

They're the first company in the world to successfully demonstrate the conversion of woody biomass into sugars using a supercritical water process. After several years of operation Renmatix has proven their process is reliable and that's attracting lots of industry attention, including a new partnership and investment from BASF, one of the world's largest chemistry companies.

One key component to Renmatix's innovative process is a Monster Industrial dual-shafted shredder from JWC Environmental. The slow speed, high-torque shredder is used as a delumping system – blocks of compressed wood chips are ground down into smaller particles so the material can be slurried and pumped into the next stage.

The company previously tried using a delumper, but the wide gaps in the unit allowed chunks of compressed wood chips to fall through the unit and pass into their filtration system. The large chips quickly clogged downstream systems and brought the company to a sudden halt. The delay was a costly one.

In late 2014 the company reached out to industrial grinder manufacturer JWC Environmental to see what solutions the company

PROBLEM: *Wide gaps in delumper lets wood chips through that blocked filters*

SOLUTION: *3-SHRED-H-1200-SS*

CUSTOMER: *Renmatix - King of Prussia, PA*

could offer. The company offers a grinder demonstration program and was able to quickly ship one of their Monster Industrial demo units to Pennsylvania.

"JWC got us the grinder quickly over the Christmas break – right when we needed it," said David Biondo, Renmatix's Senior Process Engineer. "It's helping in our process and doing what it's supposed to do."

The 3-SHRED grinder from JWC has tight tolerances between the cutters so chunks of wood cannot bypass the grinder. Even when turned off and waiting for the next batch the grinder holds back the blocks of wood to ensure the downstream filters and other sensitive processes are protected from large solids. A delumper can have 1" (25mm) or larger spacings in certain corners of the machine as well as large gaps when the machine stops running.

The 3-SHRED grinder uses two rows of sharp steel cutters rotating towards one another at a slow speed. The cutters are also stacked in a helical pattern so the teeth reach up and proactively grab material and pull it into the grinder for size reduction.



Image courtesy of Renmatix

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.

In early 2015 Renmatix purchased a 3-SHRED-H-1200 hopper fed grinder from JWC and customized it with slim 13-tooth cutters which ensure a smaller particle size for the ground-up material. The unit was further customized to fit the Renmatix process.

“Using the Monster Industrial dual shafted grinder ensures material comes out just the way we need it,” said Biondo. “The grinder cuts, squeezes and crunches the wooden blocks and it just falls apart when it hits the water - it looks like kitty chow. It goes into the grinder looking like a hockey puck and comes out as kitty chow.”

Operators like the grinder because it “just runs” and does what it is supposed to do so they can focus on the larger, more proprietary components in the system. The company is currently running 4 to 6 batches per day and is operating 24/7 in order to demonstrate the process is reliable.

The Plantrose Process

Renmatix’s process is called Plantrose and is a one of a kind system that turns general woody biomass and agricultural waste into extremely valuable industrial sugars that are used as a basic building block for hundreds of chemical processes.

Producing industrial sugars efficiently and in large quantities will help manufacturers of industrial and consumer products to move away from petroleum based raw materials, and build cleaner and more environmentally friendly products. As more customers demand environmentally friendly products, manufactures are responding and the need for green, earth friendly raw materials is growing. The Renmatix process also uses non-edible biomass as its raw material so it’s not using up valuable food crops.

What’s unique to Renmatix is the supercritical water hydrolysis process which is the quickest and most reliable way to turn cellulosic biomass into industrial sugars, according to the company. The process also does not involve acids and catalyst processes which tend to drive up the cost and difficulty of converting the biomass. Finally, the Renmatix process generates a higher yield of carbon from the biomass allowing it to operate more efficiently. “We’re an emergent company so starting-up this process is critical. We’re in a hurry to commercialize the product,” said Mike Simard, Renmatix’s Director of Engineering. “We’re happy with JWC’s flexibility and fast pace in responding to our requests. We’re also excited we found a solution off the shelf that’s already proven in many other applications.”

