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CASE STUDY

Total Product Destruction Achieves Higher Yield on Recyclable Materials Using Metal Separation Equipment from Eriez®

Destroying and recycling unwanted, recalled or retired merchandise can lead to an array of opportunities--and profit--for those recyclers with the right separation equipment. So when Nick Wildrick of Total Product Destruction, LLC decided to upgrade his operation for greater yield, the majority of the company's investment went toward new metal separation products.

Founded in 2006, Total Product Destruction began destroying fully packaged CDs and software, but today handles "anything that is not breathing," says Wildrick, who oversees 30 employees in the growing operation. In fact, the company's mission statement offers clients a "cost-effective, convenient, reliable and confidential alternative to the time-consuming task of disposing of defective or returned products that will never find its way to the open market".

More than half of the 1,000 tons per month of incoming material is post-industrial plastics, with the remainder consisting of small appliances, auto parts, pharmaceuticals, toys, clothing, shoes and even larger objects like back yard grills. Total Product Destruction operates out of a 39,000 square foot facility on 14 acres of land in Spartanburg, South Carolina.

That facility now is home to an Eriez® 12" x 24" SS Magnetic Rare Earth (RE) Drum in Housing and a Concentric 48" wide REA Eddy Current Separator with Vibratory Feeder, both ordered in April

2012 and installed later that year. "This now enables us to produce a cleaner product because we can get a wider variety of metals out of the products we end up shredding," Wildrick says.

The process begins when merchandise is brought into the facility and conveyed through a shredder to bring the particle size down to three inches. It is then granulated to reduce the material to a 1/2 to 1/4-inch size. Wildrick says at this point, the company used a series of drawer-type magnetic grates to eliminate ferrous particulates, but ultimately switched to the more effective Eriez RE Drum in Housing.

"The drawer magnet was not a high volume tool," Wildrick recalls. "Since we switched to the Drum in Housing, we can now take out much larger volumes of ferrous. And it's self-cleaning so we don't have a lot of downtime with this piece of equipment."

The granulated material is fed through a steel hopper, which has a non-magnetic stainless steel portion near the drum to prevent the hopper from being magnetically induced. The chute-type feed hopper provides increased efficiency of separation by regulating the material flow and burden depth to the face of the RE drum. It also prevents material from plunging directly onto the drum shell, ensuring long term shell performance.

After ferrous removal, the remaining recyclable material moves through a 44" wide x 36" long feeder positioned before an Eriez Eddy Current Separator (ECS) built to “extra tall” specifications. The ECS has five feet of clearance from the bottom of the discharge hoppers to the floor, allowing enough space to place a series of large container bins or Gaylords that capture the recycled aluminum, brass and copper material, as well as plastic, paper and wood. The ECS with vibratory feeder, conveyor, discharge chutes and frame measures 124" high x 100” wide x 197" long.

Key components of the Eddy Current Separator includes an easy flow hopper, electromagnetic vibratory pan feeder, a tough urethane conveyor belt, high RPM Rare Earth arched eddy current rotor, adjustable splitter and discharge chutes, magnetic rotor, drive and belt conveyor. The external rotor shell is a high strength composite material that rotates at the conveyor speed. The internal, concentric Rare Earth arched rotor with alternating polarity turns at a much higher RPM than the external shell to separate particles of nonferrous metals.

Through the induction of eddy currents and the resulting repelling forces, the alternating magnetic field selectively repels the nonferrous metals and physically separates them from other materials with minimum product loss. Many components are adjustable, including splitter location, belt speed, rotor speed and hopper opening.

The combination Drum in Housing and Eddy Current Separator provides a higher yield and a cleaner plastic material that Total Product Destruction can sell to compounders and extruders in the South Carolina region and beyond, according to Wildrick. The separated metals are sold to the recycled metals market. This means higher profits for the company and less waste sent to landfills.

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Eriez is recognized as world authority in separation technologies. The company's magnetic lift and separation, metal detection, x-ray, materials feeding, screening, conveying and controlling equipment have application in the process, metalworking, packaging, plastics, rubber, recycling, mining, aggregate and textile industries. Eriez manufactures and markets these products through 12 international facilities located on six continents. For more information, call toll-free (888) 300-ERIEZ (3743) within the U.S. and Canada. For online users, visit www.eriez.com or send email to eriez@eriez.com. Eriez World Headquarters is located at 2200 Asbury Road, Erie, PA 16506.