

# RecoverMax®

Categories: Recycling

Published June 04,2018

## **Max. Metal Recovery from ASR Fines or Incinerator Bottom Ash with a Purity of > 98%**

ASR (Auto Shredder Residue) fines, as is referred to in the US or "Shredder-heavy fraction/shredder-light fraction", in Europe, is the starting material thanks to which previously unattainable recovery rates can be achieved. The remarkable success story of the recovery of non-ferrous metals (<12 mm) in the treatment of shredded cars continues further.

What emerged in late 2015 from the cooperation of the leading manufacturer of recycling technologies JOEST GmbH + Co. KG and its American partner Best Process Solutions, Inc. (BPS), continues with the production of complete treatment plants at many other locations in North America. In the US states of Ohio, Pennsylvania, Texas and Illinois, four plants with production capacities of 2 to 10 tons per hour are already in operation and four more are planned for commissioning in 2018. A key factor here was the systematic, worldwide patent-pending interaction of the system components for the JOEST long-particle separators, flip-flow screens, sifters and separation tables. This is optimally combined with the RecoverMax® Separator from BPS for the separation of mineral components.

### **System design, which manages with confined space**

Only the efficient system design results in a very high treatment rate of recyclable fine metal. The recycling process starts with the concentration of long copper cables through the JOEST Long Part Separator. This is followed by the screening of the fraction 0-12 mm with approx. 4 mm in the JOEST Flip-Flow Screen TOPCILLA. Both the fraction 0-4 mm and the fraction of 4-12 mm are each fed to a JOEST K-Sifter. As seen from the side, the sifter has the shape of the letter "K" due to its design, which gave it its name. Its position is located above the aspiration hood of the separation table and serves for the pre-separation of very light particles in the feed material. This allows for a higher separation efficiency and throughput capacity, increases the flowability of the bulk material and the setting process. The K-Sifter, combination of sifter and separation table, is compact and uses the same process air, thanks to which the exhaust air volumes are considerably reduced. Its separation result corresponds to the values achieved in separate systems. The adaptation of the air flow ensures that the materials to be separated are highly variable. Thanks to the construction with relatively small dimensions, this module combination fits perfectly in systems with confined spaces. In the meantime, the K-Sifters can be used in working widths of 450 mm, 900 mm and 1200 mm, making them compatible with the integrated separation tables.

An important feature in material feeding is the JOEST Vibrating Feeders, which distribute the product across the entire width of the separator. Rubber screens counteract the inflow of additional air into the air sifter. With the entry into the sifter zone, the separation of light and heavy material takes place by means of the cross-flow and counter current sifting process. At the aspiration flange, the ultralight material is sucked off, whereas the heavy material passes to the separation table and is fed to a new separation process according to density. Subsequently, the separation of the remaining organic components and the plastic takes place at the separation table. The heavy material fraction, consisting of mineral and metal, is fed from the separation table into the RecoverMax® Separator from BPS. The worldwide patent pending process separates the mineral components from the heavy fraction. This system, developed

and tested over several years together with the JOEST treatment technologies, ensures the high quality standard in ASR recycling. The high standards ensure market leadership in the USA.

In an interview with Recycling Today on the occasion of the start-up of the first Recover Max plant in Ohio, the Mill Iron & Metal president, Grant Mill iron senior, said: "We are very satisfied with the metal extraction. The end product exactly meets my expectations ever since the commissioning."

### **Due diligence in the further recycling process**

In the following recycling process, a drum magnet removes residual magnetic components from the metal fraction.

Another screening machine classifies the remaining fraction into three sizes. Each size of the material stream then passes to a JOEST Three-Way Separation Table to separate the remaining, digested light particles. Here, the different material sizes are treated in parallel in the three chambers, with two imbalance motors providing the necessary oscillation of the chambers. The air speed and each air flush flap are individually adjustable.

### **Best rates in recycling, energy consumption and wear**

Metal purities of more than 98 percent are possible with JOEST and BPS system. Thanks to an additional optical sorting device, heavy metals such as Copper and light metals such as Aluminum can still be separated in case of fraction 3mm. Thanks to the development of the RecoverMax<sup>®</sup> Separator, the complete system requires only a minimum of energy and wear costs in comparison with other systems that work with shredding technology such as, for example, hammer mills. The operating and investment costs are thus significantly lower according to the manufacturer.

### **There are many reasons for this success**

Dr. Marcus Wirtz, Managing Director of JOEST, extends the information sheet of the JOEST / BPS partnership for market success even further: "Less wear and tear with high energy efficiency, best metal recovery rate with 98% purity — the result of a partnership with long-term experience and application know-how between JOEST and BPS in scrapped car recycling."



*Dr. Marcus Wirtz*



*Zorba*



*Copper Cables*

**A variety of reference systems:**



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