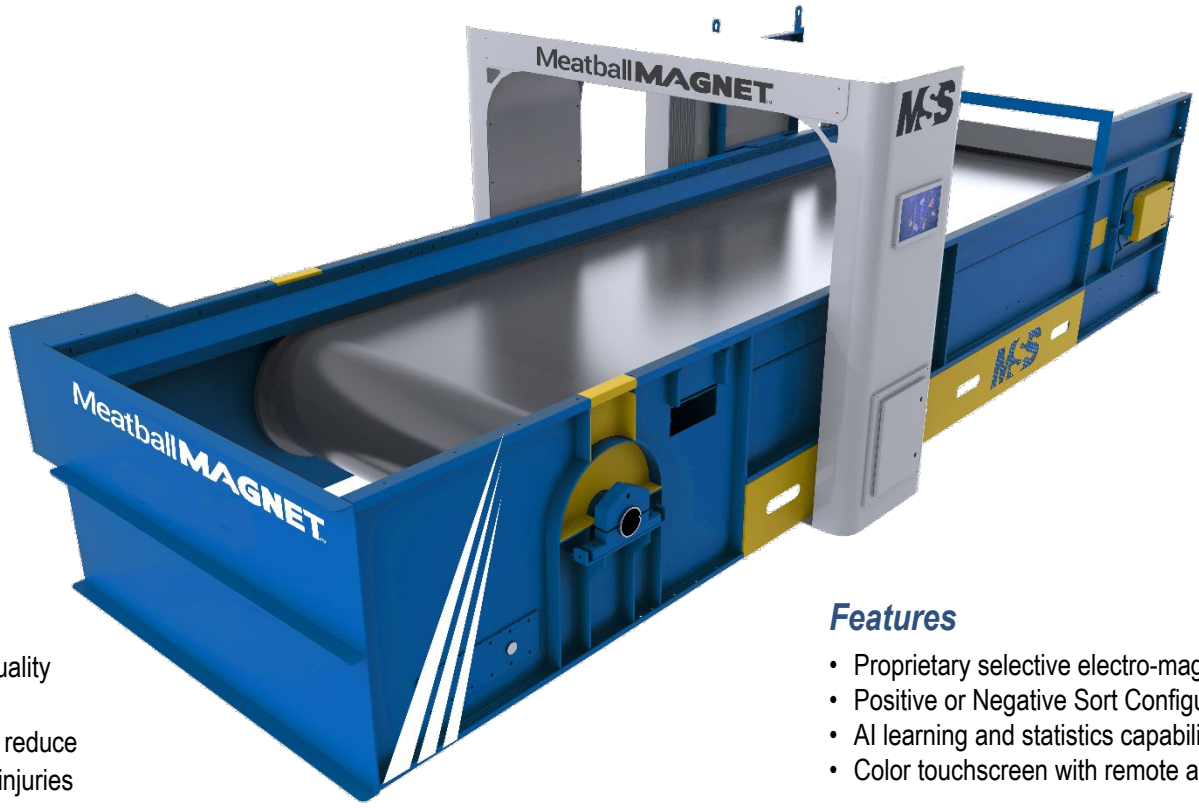
MSS MeatballMAGNET™



Advantages

- Improves Steel #1 quality and consistency
- Improves safety and reduce potential ergonomic injuries

Features

- Proprietary selective electro-magnets
- Positive or Negative Sort Configuration
- AI learning and statistics capabilities
- Color touchscreen with remote access

Identify and Automatically Sort Meatballs from Steel at High Speeds

Description

The MSS Meatball Magnet™ uses AI to detect and classify “meatballs” from “steel” and separates them using selective electro-magnets. There are few limitations in regard to object weight and odd 3D-shaped meatballs. The picking speed is a magnitude faster than any robotic solutions.

Specifications

Machine widths:	32“, 48“, 64“
Conveyor speed:	250FPM
Electricity:	15-30kW

US Patents

No. 11,318,476
No. 11,465,158

MSS

+1 615-781-2669 | info@mssoptical.com | mssoptical.com
300 Oceanside Drive, Nashville, TN 37204, USA
MSS, Inc. is a division of CP Group

Made in the **USA**

MSS MeatballMAGNET™

Meatball Sorting Challenges	Meatball Magnet™ Solution
Manual Sorting Removal of meatballs is one of the only tasks in an auto-shredder yard that is still performed by manual sorters. This poses several risks: o Difficult sorting task that requires a substantial amount on-going staff training and quality monitoring. o Ergonomically disadvantageous: Up to 25lbs heavy items have to be lifted of the sorting belt. o Potentially dangerous: targeted materials can be very hot coming right off the shredder, have very sharp edges, etc.	The Meatball Magnet™ automates this function by using individual electro-magnets, positioned across the width inside the head pulley, that are selectively activated whenever a meatball is detected. This alters the trajectory of meatballs downward away from the clean steel. This increases: o Steel #1 quality o Steel #1 quality consistency o Overall safety o Reduce potential ergonomic injuries
Sensor Technology The contaminants on the ferrous QC lines are of different categories: o Motors, transformers, alternators, etc. (“Meatballs”) o Rubber particles with steel wires (pieces of tire) o Wire harnesses o Textile/fabrics Conventional sensors have difficulties individually classifying all the above categories. Recent advances in artificial technologies (AI) now allow it to perform the above classifications with ease.	Recent advances in artificial technologies (AI) now allow these classifications with ease. MSS combines AI with deep learning neural networks that exceed human performance in identifying individual items. An added advantage is that the availability of statistical data generated by the AI. Monitoring of real time contaminants and final Shred #1 output quality is possible on 100% of the material, not just spot checks. A cloud-based dashboard allows the operator to view, analyze and export this data at their convenience.
Sorting of Heavy Weights o With meatballs up to 25lbs in weight, compressed air jets are not feasible. o A robotic arm with electro-magnetic effector would have to be very strong and too slow due to the inertia of heavy meatballs. o A robotic arm with clamp effector would rely on the target material being evenly spread and have plenty of empty space around it to grab it properly.	Heavy meatballs are large and will therefore activate several of the electro-magnets across the belt at once, therefore generating a larger force to pull it downward from the natural trajectory. In other words, the larger the meatballs the larger the electro-magnetic force with which they are pulled downward.
3D Shape o Using compressed air jets on aerodynamically shaped items is difficult. o A robotic arm with electro-magnetic effector would have difficulties attracting the 3D shaped item properly. o A robotic arm with clamp effector would rely on the 3D item not rolling/moving around to being able to properly grab it and not slip out.	Because the electro-magnets are positioned less than 1/2” from the material, our proprietary design generates a much stronger electro-magnetic field and is able to pull down even oddly shaped 3D items from the natural trajectory efficiently.
Number of picks per minute o Using a robot limits the available picks to only 15-20 per minute with one arm. Multiple arms could be required at a much higher cost and space requirement. o If meatballs get to the QC station in surges, robotic extraction cannot keep up. It would lead to the Steel #1 stream being unnecessarily contaminated and a lower recovery rate of the contaminants.	Running the acceleration conveyor a 250FPM is 5-10 x faster than any robotic arm solution. Turning the selective electro-magnets “on/off” is a magnitude faster than any robotic arm solution. Removing multiple magnetic “non-steel” items at once, for example if they happen to sit side by side on the conveyor belt, is no problem. A robotic arm cannot keep up with the picking speed.

MSS
+1 615-781-2669 | info@mssoptical.com | mssoptical.com
300 Oceanside Drive, Nashville, TN 37204, USA
MSS, Inc. is a division of CP Group

Made in the USA