CASE STUDY

ERIEZ

Metals Recycling

Shred1 Ballistic Separator Elevates Low-Copper Recovery & Melt Quality

Advanced Separation

for a Smarter Scrap Stream

Copper contamination is one of the most persistent challenges in the metal recycling industry. When copper levels rise, ferrous scrap values fall, forcing mills to make a costly choice: either adjust their melt chemistry or reject the feed entirely.

Now, there's a better option. The Eriez Shred1™ Ballistic Separator offers processors a proven, high-efficiency method to control copper content and capture more premium-grade ferrous materials without compromising throughput or productivity.

Installed downstream of the primary scrap drum magnets, Eriez Shred1 utilizes magnets and ballistics to separate material by mass and density, rather than relying on sensor or X-ray technology with air or mechanical rejects. Liberated shred is fed to a high-speed conveyor. The shred with a lower copper content will be affected by the magnet more than the ballistics of the high belt speed, and will wrap around the head pulley and report behind the splitter.

The shredded material with higher levels of copper will be affected by the ballistics of the higher belt speed more than the magnet and will report over the splitter, conveying to the polishing drum and picking station.

The result: cleaner ferrous material, predictable copper levels, consistent quality, and higher melt values at the mill. All these benefits are achieved with minimal operator input and no loss in throughput.

Application 1:
Boosting #1 Shred Recovery & Revenue

Cleaner Ferrous. Higher Value. Same Throughput, Greater Value.

At a major U.S. scrap facility producing more than 140 tph, operators sought to increase the yield of the premium low-copper ferrous recovery without slowing down production. With some process improvements and feed management into the shredder, the operator was able to produce ferrous material with a copper content as low as 0.13%.

Analyzing the data, the customer learned that producing the ultra-low copper fraction (#1) allowed them to blend the higher copper fraction of the #2 and still maintain a low copper fraction desired by steel mills. This allows them to supply 100% of the available shred as a low copper fraction and receive a premium on every ton.

Separation That Pays for Itself

After installing Shred1, the yard recorded a sharp improvement in product quality:

- #1 Shred: 0.13% Cu

Beyond producing a cleaner low-copper shred and generating additional income through increased copper pickings, the Shred1 with polishing magnet technology has demonstrated a direct impact on melt efficiency. Scrap that typically melts at around 88% yield has shown results reaching up to 94% after implementing this process. These operational and financial gains combine to accelerate payback, often achieved in months rather than years.

Consistent, Repeatable Performance

Shred1 consistently delivers low-copper ferrous in the 0.16–0.20% Cu range, even under variable feed conditions. With fewer copper-bearing fines in the premium stream, the facility now ships cleaner, higher-value scrap with greater consistency and reduced manual picking.

Application 2:
Precision Melt Control Across 76 Heats

Improved Separation for Stronger Melt Performance

A high-volume European recycling operation faced a similar copper challenge. Before installing Shred1, the site's average shred contained 0.20% Cu, forcing operators to dilute furnace charges with expensive low-copper scrap to stay within melt limits.

Verified in Extensive Melt Trials

Following installation of Shred1, engineers conducted controlled trials using pre-shredded, sheared HMS2, and end-of-life vehicles (ELVs). The results were striking:

- Shred #1 (low-copper): 0.130–0.162% Cu (average 0.145%)
- Shred #2 (high-copper): 0.472% Cu

During an extended 76-heat trial, where shredded scrap made up 30% of the total melt mix, measured copper values closely matched theoretical predictions, confirming the precision and repeatability of the Shred1 separation process.

Controlled Chemistry, Confident Melts

Improved separation control now allows operators to maintain target melt chemistries while reducing reliance on dilution scrap. Consistent material quality supports tighter furnace optimization, improved yield, and greater melt efficiency across every batch.

The Measurable Advantage
of Ballistic Separation

Across the globe, processors are proving that copper control doesn't have to come at the expense of production rates. The Shred1 Ballistic Separator combines mechanical simplicity, high throughput, and process precision to deliver pure, premium ferrous material with minimal maintenance or oversight.

Integrating Shred1 into a processing line enables recyclers to achieve:

- Quantifiable value recovery through higher-grade #1 shred
- Reduced melt variability and improved furnace efficiency
- Lower processing cost compared to optical or X-ray systems
- Scalable performance exceeding 100 tph

As part of Eriez' full line of ferrous and nonferrous recovery solutions, Shred1 plays a central role in optimizing metal recovery and profitability.

For more information about Eriez Shred1 Ballistic Separators and other separation technologies, **visit Eriez.com**

Proven Technology.
Trusted Partner.

With more than 80 years of innovation in magnetic and ballistic separation, Eriez continues to set the global standard for metals recovery. From scrap yards across North America to steel mills throughout Europe, Shred1 installations help recyclers produce cleaner products, achieve stronger margins, and gain greater control over their most valuable materials.

ERIEZ

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Established in 1942, Eriez is a global leader in separation technologies. Our commitment to innovation has positioned us as a driving market force in several key technology areas, including magnetic separation, flotation, metal detection, X-ray inspection and material handling equipment. The company's 1,00+ employees are dedicated to providing trusted technical solutions to the mining, food, recycling, packaging, aggregate, and other processing industries. Headquartered in Erie, Pennsylvania, USA, Eriez designs, manufactures, and markets on six continents through 12 wholly owned international subsidiaries and an extensive sales representative network. For more information, visit www.eriez.com.

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