

# Zero-gap, zero surprises: precision pre-shredding for safer scrap flow

In metal recycling, the differences between brands are clear, yet the biggest impact often comes from the operating philosophy behind the machine.

Italian recycling technology specialist Zato has a well-established reputation for shredders.

The slow-speed twin-shaft pre-shredder has become the tool that defines process control. Running at truly low speed of between three and six rpm, and with exceptionally high torque, it cuts instead of tears, opening up material without stress, vibration or excess energy demand. Zato's popular two-shaft shredders includes the Blue Devil. Where conventional higher-speed systems rely on impact, this rotary shear technology works by precision. The zero-gap geometry between blades ensures that even the smallest items, such as batteries, gas tanks and unshreddables are intercepted before reaching the hammer mill. The result is not only a cleaner, more homogeneous output but a safer process from the very first turn of the shafts.

As Gio Capiou of Belgium's Capiou Recycling notes: 'Before installing the pre-shredder, the wear in our high-speed shredder was too high and the capacity too low.' The new configuration immediately improved both performance and energy efficiency: 'The pre-shredder consumes very little power and the operational expenditures are much lower than in the previous ripping style shredder.'

## PRECISION BECOMES PROTECTION

Low-speeds give operators more than torque: it gives them control. The machine's PLC continuously monitors load and shaft behaviour, slowing rotation for dense or thick materials to deliver more torque. This automatic response prevents unshreddables from being fed in the hammermill, protecting the hammer mill itself from damage and eliminating the risk of explosion.

As Capiou observes: 'We avoid explosions in the hammer mill because batteries are caught before they go through.' This statement captures the essence of the design: safety not as an add-on but as an intrinsic part of how the machine works.

## EFFICIENCY PER TONNE

Predictability defines modern recycling economics. Maintenance is planned, not reactive; wear is measured, not guessed. Across sites, the total cost of wear parts averages around EUR 5 per tonne, the result of high-torque cutting and consistent feed. The pre-shredder's controlled geometry avoids material wrapping and shaft stress, translating precision into measurable savings.

Whether it works upstream of a shredder or as a stand-alone processor, the principle remains the same: steadier flow, longer life and fewer surprises. The combination of low speed, high torque and zero-gap precision turns what was once brute preparation into a controlled, continuous process.

