



SEPARATION OF E-SCRAP (WEEE) MATERIALS

Solutions for producing premium qualities

FLEXIBLE SORTING SOLUTIONS FOR DEMANDING E-SCRAP RECYCLING TASKS

E-scrap contains valuable materials such as copper, aluminum, gold, and rare earths. Efficient recovery requires precise and flexible sorting technologies.

With STEINERT sorting systems, cleanly separated fractions can be created across all materials. Magnetic and eddy current separators (ECS) recover ferrous and non-ferrous metals, while multisensor systems like the STEINERT KSS combine metal detection, colour and 3D recognition, X-ray, and NIR technology for maximum purity and adaptability to changing recycling tasks. Additionally the MSort AK delivers precise colour sorting of fine metal granulates for maximum material purity.

For plastics, the STEINERT XSS® T EVO 5.0 removes halogen compounds, and the UniSort Finealyse sorts visible and black plastics such as ABS, PS, PP, and PC.

With the UniSort BlackEye, even black plastics can be separated into pure fractions.

Together, these technologies enable efficient recovery of valuable raw materials and high-quality, market-ready recycling products from WEEE.

// Typical sorting materials in an e-scrap application:

- + Metal & polymer separation
- + Recovery of Fe & Non-Fe concentrates
- + Removal of PVC/CL & BFR containing plastics
- + Brominated plastics containing flame retardant additives (POPs)
- + Producing metal concentrates like aluminium, copper or lead from dense media separator systems
- + Purification of stainless steel
- + Enrichment of metal granulates down to 0.5 mm grain size

*Nonferrous metal recovery and cleaning
ZORBA by STEINERT EddyC*



*NF-metal segregation by metal type
or removal of BFR plastics with
STEINERT KSS | XF L*



*STEINERT ISS for
a high quality
stainless steel
product or cable
purification*



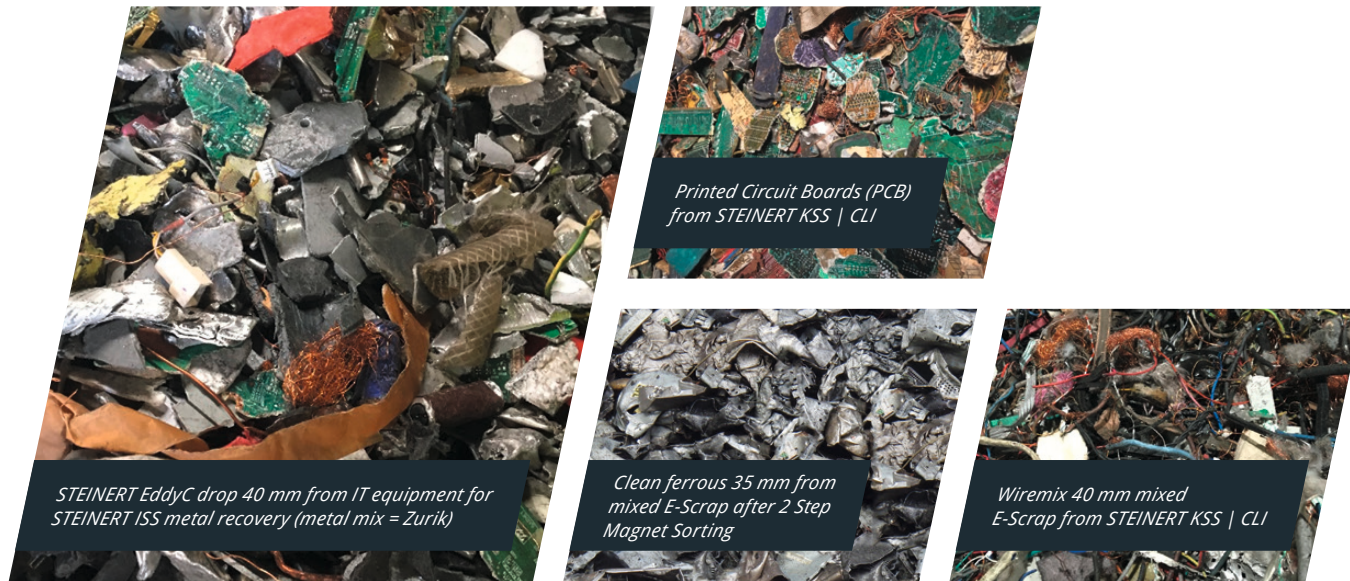
*MSort AK for the separation of impurities
from copper cable granulate*



*Separation for ferrous metals with
STEINERT MTP drum magnets available
in various designs*

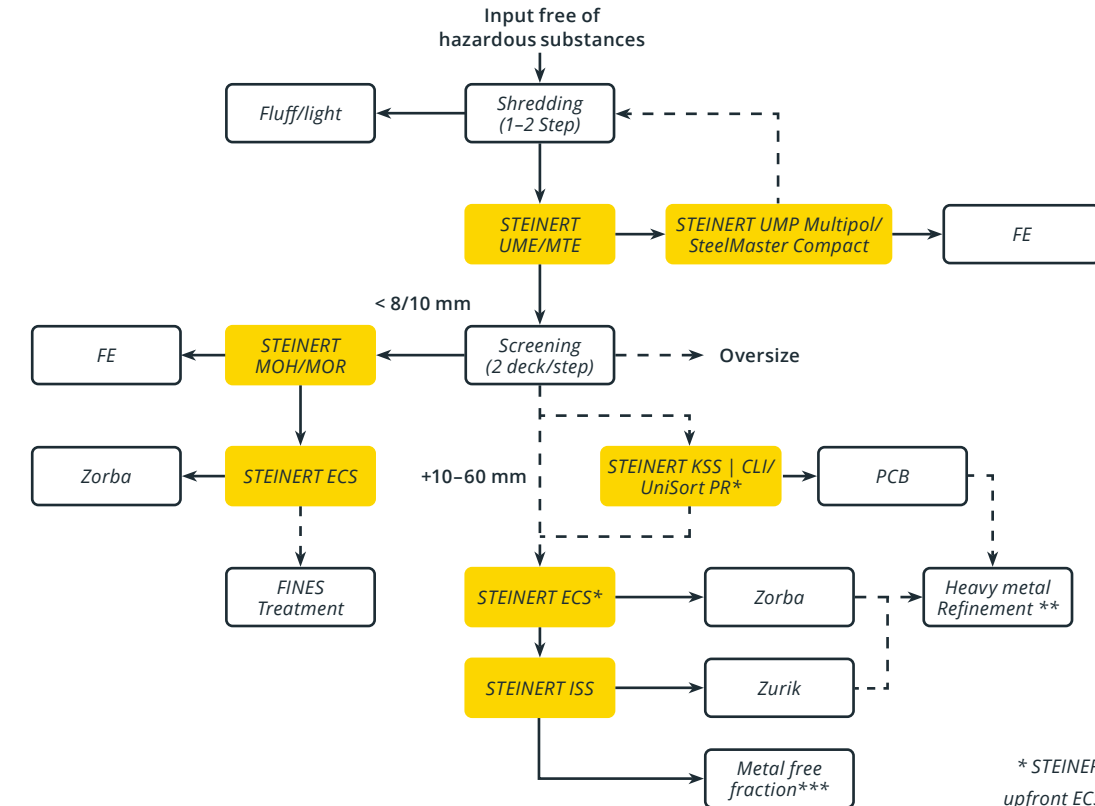
SIMPLIFIED FLOWCHART OF E-SCRAP PROCESSING FOR CATEGORIES 4/5/6

Showcasing a modern downstream solution for complex e-scrap sorting



MAGNETIC SEPARATION

NON-FERROUS SEPARATION



* STEINERT KSS/UniSort PR option
upfront ECS to pre-concentrate PCB

** See page 6

*** Polymer sorting see page 8

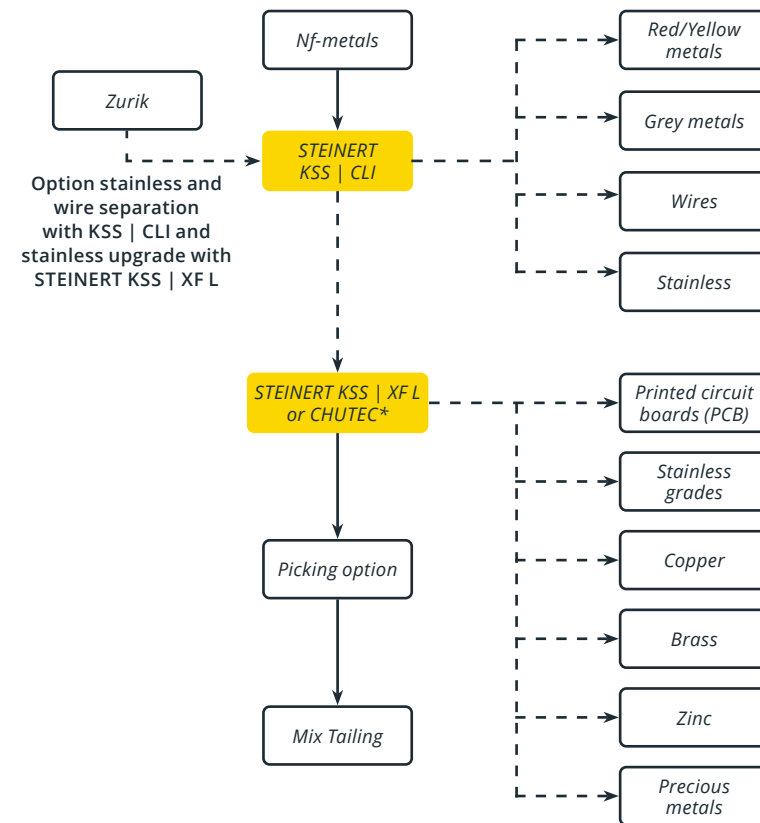
UPGRADE YOUR NON-FERROUS HEAVY METALS AND STAINLESS STEEL

Simplified flowchart for the separation of mixed heavy metals from e-scrap



COLOUR-SHAPE-INDUCTIVE

XRF BASED SEPARATION

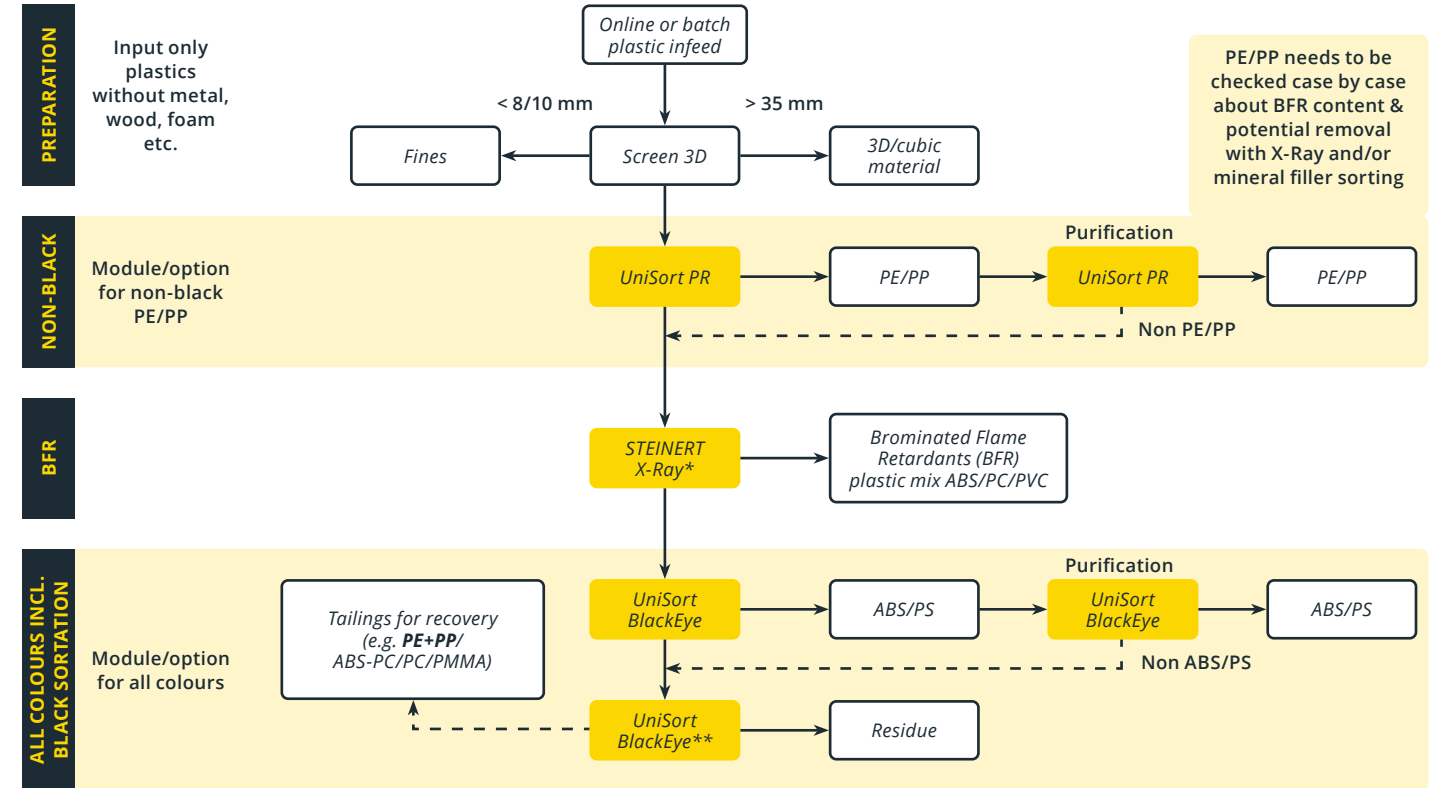


* KSS | XF L for coarse material +15 mm or CHUTEC down to 5 mm

BATCH PROCESS FOR PURIFICATION

SORTING E-SCRAP PLASTICS MIX – FLEXIBLE LAYOUTING ACCORDING TO INDIVIDUAL DEMANDS

Simplified flowchart for mixed plastics after metal recovery for further polymer sorting



* Type of X-Ray technology & position (before/after IR/MIR) depends on specific product goals & input

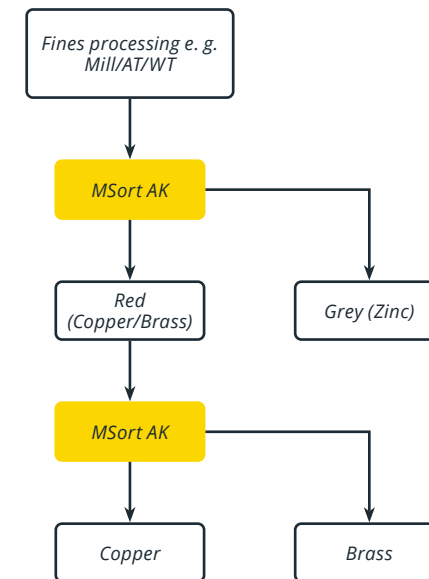
**Recovery sorting for potential tailings on demand

MSORT AK

Fines colour sorting

// Sorting by colour

- + Fine NFE metal sorting by colour
- + Fine grain sizes from 0.5–60 mm
- + Input from air table & water table separation after material chopping/milling or from fines ECS sorting
- + Material sources wires, E-scrap, aluminium granulates from shredded white goods, and others
- + Designed for flexible operation – either as a stand-alone solution or as part of an inline setup
- + Can be operated with a single or dual task setup



OUR MOST IMPORTANT PRODUCTS

for separating E-scrap to valuable resources

Primary stages for separating iron:



STEINERT MTE/MTP

Magnetic drums are usually used in the line to separate free iron and ferrous compounds before the next sorting stages. Magnetic components of various grain size ranges are thereby specifically separated and can be fed back into the process if necessary.



STEINERT UME

Self-cleaning overhead suspension magnets reliably remove coarse iron, thereby producing clean iron scrap. The overhead suspension magnet is arranged above a feeding conveyor belt and extracts the ferromagnetic materials from the supply flow against the force of gravity.



STEINERT UMP Multipol

FE concentrates often contain non-FE materials and composites that reduce recyclability and revenue. The STEINERT UMP Multipol removes these efficiently. Its extended magnetic field with special pole design turns the material multiple times, separating non-magnetic impurities.



STEINERT SteelMaster Compact

The STEINERT SteelMaster Compact separates FE scrap from compounds such as meatballs and non-magnetic impurities by utilising ballistic effects within a magnetic field. The effective range of the permanent magnets can be adjusted to suit the specific sorting task. Designed for particle sizes up to approx. 100 mm, it is ideal for FE from WEEE.

Recovery of non-ferrous metals:



STEINERT EddyC®

The eddy current separator can be used wherever non-ferrous metals can be recovered or separated. Using eddy current technology, it produces marketable non-ferrous metal mixes containing aluminium, copper, zinc or brass.



STEINERT EddyC® FINES

The STEINERT EddyC® FINES was developed especially for separating particularly fine non-ferrous metals. Using eddy current technology, it produces marketable non-ferrous metal mixes containing aluminium, copper, zinc or brass.

OUR MOST IMPORTANT PRODUCTS

for separating E-scrap to valuable resources

Separation of light and heavy metals:



STEINERT XSS® T EVO 5.0

The STEINERT XSS® T EVO 5.0 is used for density-based sorting – for example, to separate heavy metals from aluminium.



STEINERT KSS | XT CLI EVO 6.0

An extension to the STEINERT XSS® T EVO 5.0 with a laser for 3D detection, one colour and one induction sensor. This system optimises sorting results for a wider range of applications. Since it's equipped with several sensors, this is a STEINERT KSS.



STEINERT KSS | XF L

The STEINERT KSS | XF L is an X-ray sorting system for the precise sorting of metals according to their elemental composition. Using X-ray fluorescence and 3D detection, it reliably processes particle sizes from 10 to 120 mm – even in contaminated or complex material streams.



STEINERT CHUTEC | XF L

The sorting machine with a chute and X-ray fluorescence technology (XRF) is particularly well suited to sorting fine heavy metals. Plastics containing brominated flame retardants (BFR) can also be distinguished from clean polymers using XRF.

OUR MOST IMPORTANT PRODUCTS

for separating E-scrap to valuable resources

Colour sorting systems:



MSort AK

The MSort AK is used for highly precise colour sorting in fine grain sizes of 0.5 mm and above. The chute sorting system is particularly suitable for dry colour sorting of bulk material in a particle size range from 0.5–60 mm.

The chute sorting system is also able to accurately detect plastic or nonferrous metal granulates. Inductive detection is optional and enables ferrous and non-ferrous metals of 0.8 mm and above to be discharged with an extremely high level of sensitivity.



UniSort PR

The UniSort PR EVO 5.0 is used wherever NIR technology is needed to sort valuable residues. The UniSort PR EVO 5.0 is a sorting system that uses hyper-spectral imaging camera technology to sort various types of plastic, paper & cardboard as well as wood products, and allows of sorting black plastics using UniSort Black technology.

Infrared sorting systems:



UniSort Finealyse

UniSort Finealyse is a sorting system for separating bulk materials in the fraction range from 3 to 25 mm. To detect the type of material or sort by colour, a high-resolution near-infrared (NIR) camera is available as UniSort Finealyse P, or a colour detection unit as UniSort Finealyse C.



UniSort BlackEye

Optimized by design for sorting bulk materials, UniSort BlackEye offers Hyper Spectral Imaging (HSI) technology in the mid-infrared (MIR) range to detect dark to black materials. This enables the differentiation of key polymer types with dark coloration.

TEST BEFORE YOU BUY:

Test your sorting material in the Test and Development Centre

Benefit from skilled engineers and a combination of cutting-edge magnets, non-ferrous metal separators and sensor sorting systems in a recycling experience space.

Realistic testing can be undertaken in the Test and Development Centre at an industrial scale to reproduce the demands, feasibility and ROI of the planned investment and create investment security on the basis of data and facts.

- + Check the feasibility, planning and layout of the system
- + Carry out sorting trials
- + Verify sorting performance in terms of quality, yield and throughput

Our application specialists from the test centre and our sales team will help you solve your sorting tasks. If desired, we can directly demonstrate the potential for recovering material with STEINERT sorting technology using your own test material.

Want to try out the STEINERT test centre for yourself? Simply get in touch with your personal STEINERT contact.



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