THE RESOURCE
SEARCH ENGINE

SORTING OF COMMERCIAL WASTE AND MIXED CONSTRUCTION WASTE

How to efficiently recover valuable residues

STEINERT

MAGNETIC **+** SENSOR **SORTING SOLUTIONS**

NUMEROUS VALUABLE RESIDUES AND PURE-GRADE PRODUCTS

One topic is now a focus across all industries: finite resources and sustainability affect us all.

Increasingly stringent and demanding recovery requirements are also presenting the recycling industry with new challenges. Operators of sorting and material recovery facilities need to achieve higher and higher rates of recovery and better quality levels. Today and in the future, in many cases very inhomogeneous materials need to be detected, sorted and processed to recover valuable residues and produce pure-grade products.

Many valuable residues can now be recycled. Everyone involved in the recycling loop can take the advantage by using innovative sorting technology.

STEINERT's individual sorting solutions deliver valuable products for the recycling industry. These form the basis for secondary raw materials for new products.

This Solution Guide provides an overview of the most efficient sorting processes for recovering and sorting products from commercial and mixed construction waste.

// Our sorting machines

+ enable the recovery of pure-grade products for the secondary raw materials industry

+ deliver high quality levels

// Special products

+ ferrous and non-ferrous metals
+ wood
+ plastic 2D films
+ 3D plastics
+ paper & cardboard
+ minerals
+ refuse-derived fuels

Recovery of non-ferrous metals using STEINERT EddyC

Separating ferrous metals using STEINERT UME
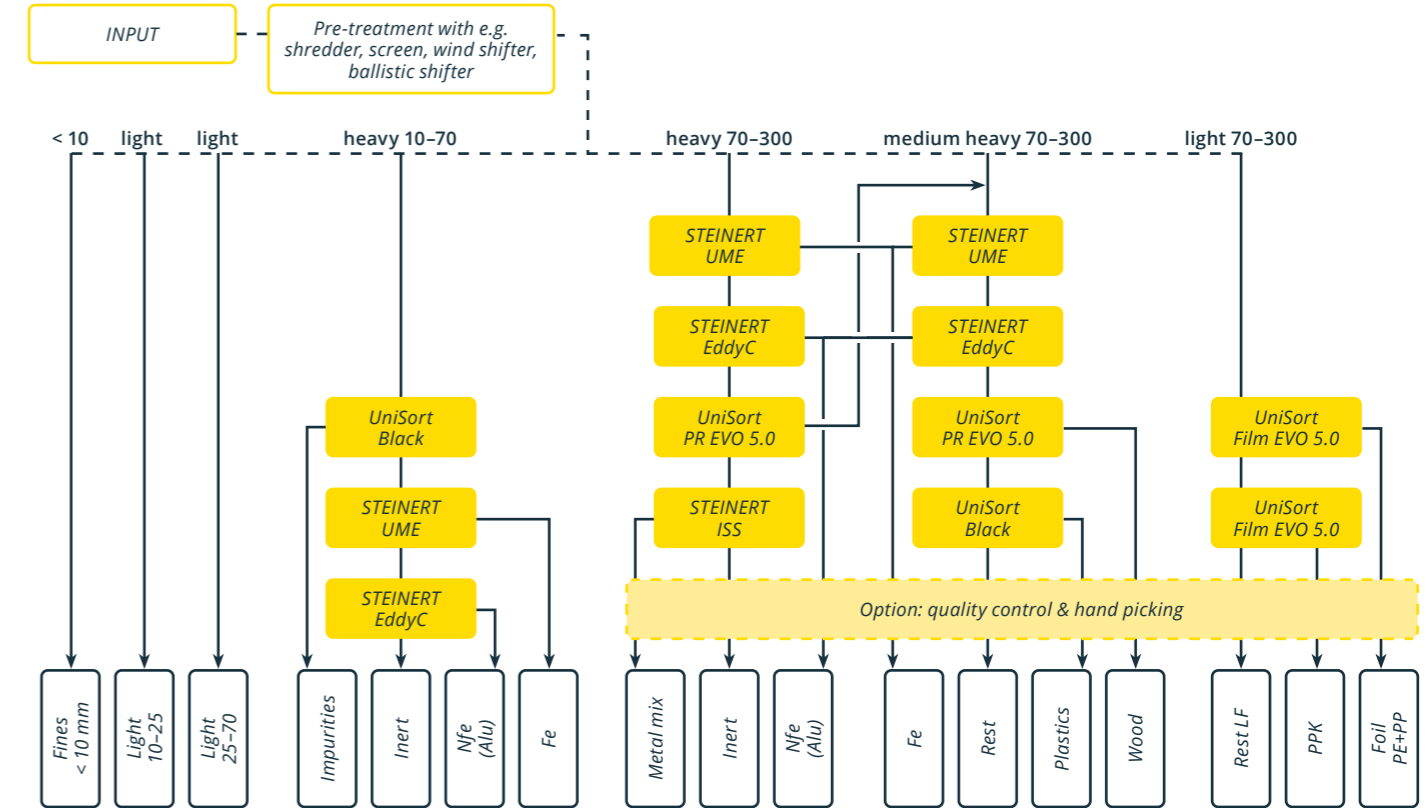

Sorting plastics and wood using UniSort PR EVO 5.0

Sorting metals and stainless steel using STEINERT ISS

Sorting paper & cardboard as well as films using UniSort Film EVO 5.0

SORTING VALUABLE RESIDUES FROM COMMERCIAL AND MIXED CONSTRUCTION WASTE

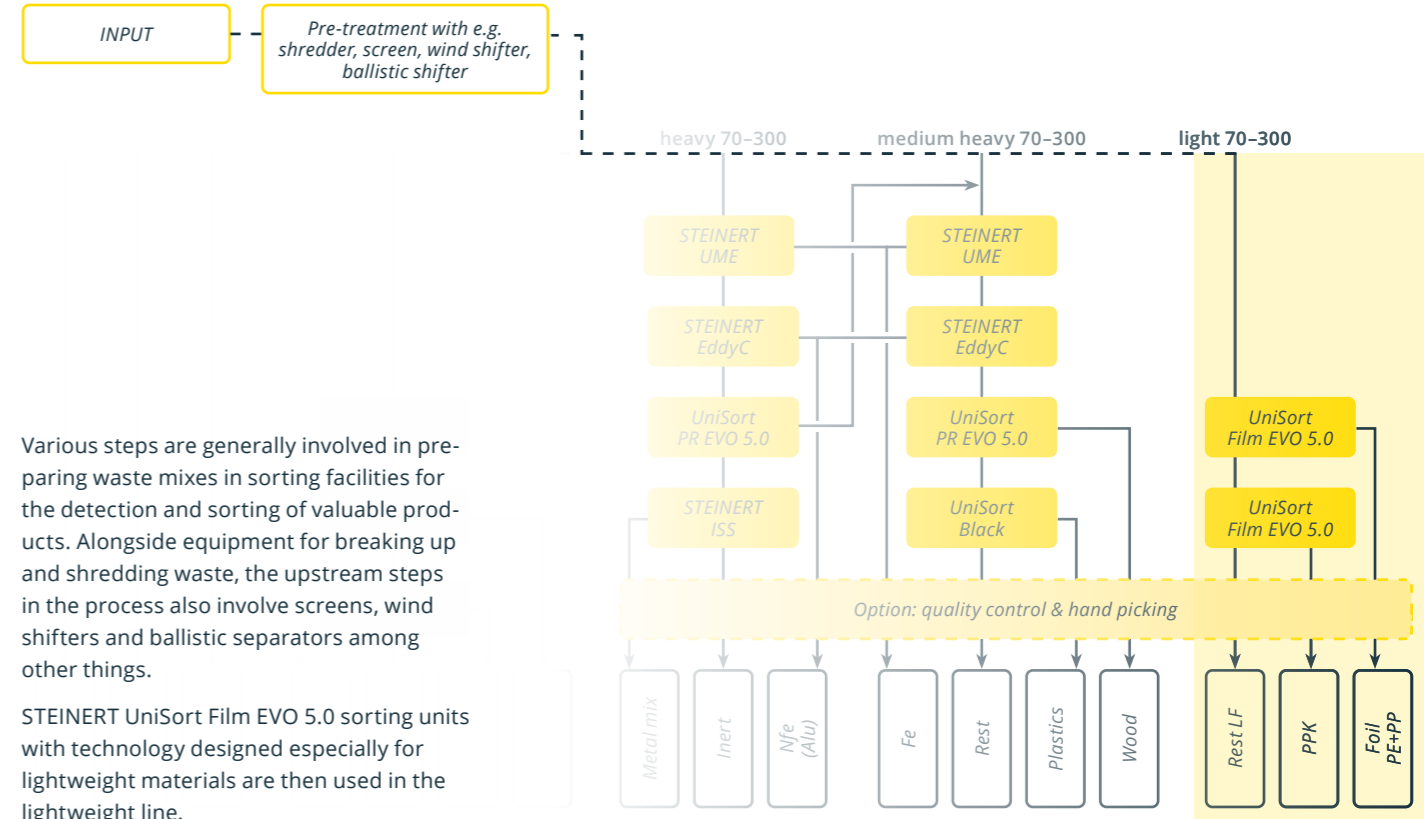*Simplified flow chart for sorting valuable products from commercial and mixed construction waste*

Wood product from UniSort PR EVO 5.0

Plastic product from UniSort PR EVO 5.0

Film product from UniSort Film EVO 5.0

Mixed metal product from STEINERT ISS

Paper & cardboard product from UniSort Film EVO 5.0

Mineral product from UniSort Black

Simplified flow chart diagram:

INPUT → Pre-treatment with e.g. shredder, screen, wind shifter, ballistic shifter

Branches: < 10 | light | light | heavy 10–70 | heavy 70–300 | medium heavy 70–300 | light 70–300

- heavy 10–70: UniSort Black → STEINERT UME → STEINERT EddyC
- heavy 70–300: STEINERT UME → STEINERT EddyC → UniSort PR EVO 5.0 → STEINERT ISS
- medium heavy 70–300: STEINERT UME → STEINERT EddyC → UniSort PR EVO 5.0 → UniSort Black
- light 70–300: UniSort Film EVO 5.0 → UniSort Film EVO 5.0

Option: quality control & hand picking

Outputs: Fines < 10 mm | Light 10–25 | Light 25–70 | Impurities | Inert | Nfe (Alu) | Fe | Metal mix | Inert | Nfe (Alu) | Fe | Rest | Plastics | Wood | Rest LF | PPK | Foil PE+PP

SEPARATING THE LIGHTWEIGHT FRACTION

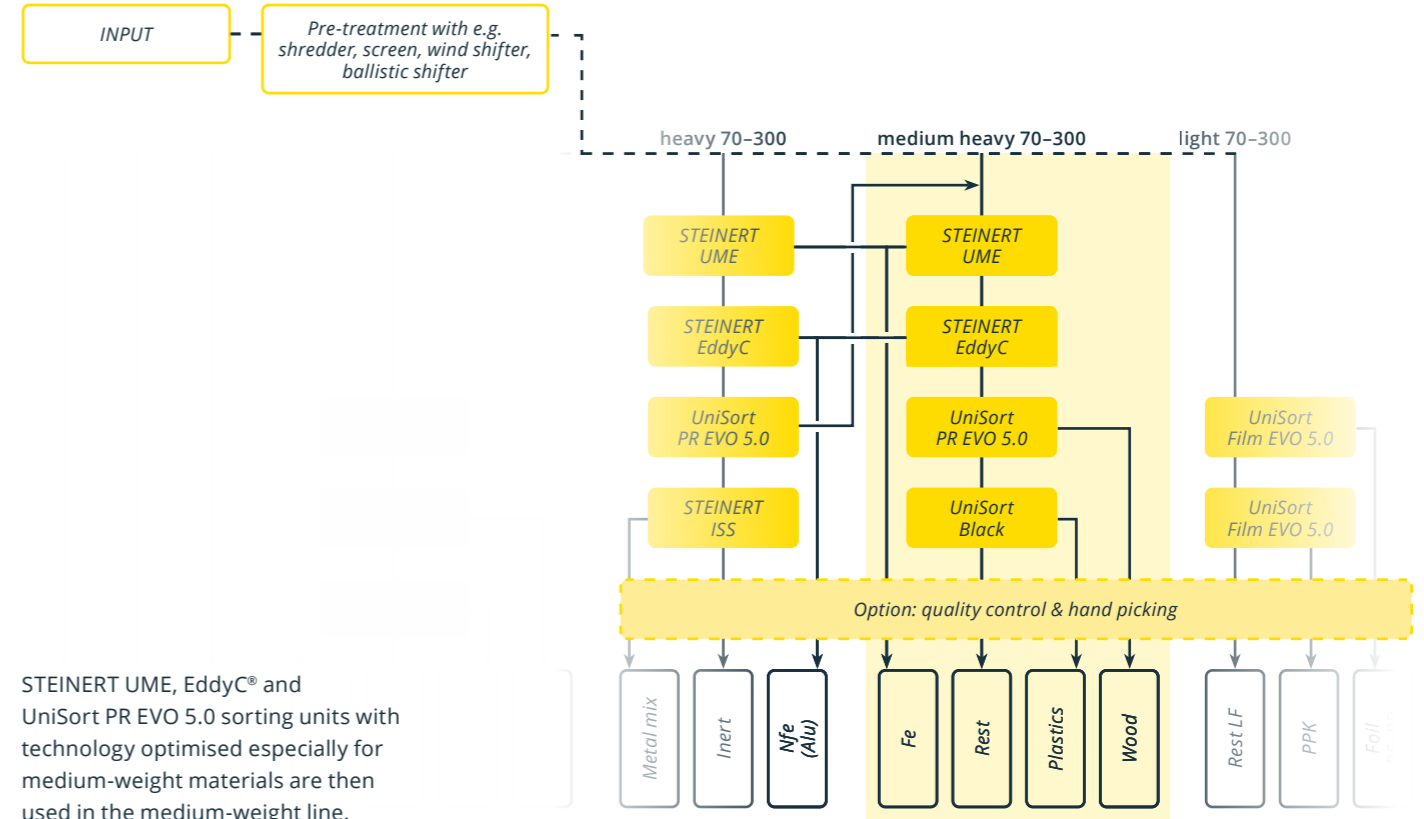*Process step: Separating film and paper products*

Various steps are generally involved in preparing waste mixes in sorting facilities for the detection and sorting of valuable products. Alongside equipment for breaking up and shredding waste, the upstream steps in the process also involve screens, wind shifters and ballistic separators among other things.

STEINERT UniSort Film EVO 5.0 sorting units with technology designed especially for lightweight materials are then used in the lightweight line.
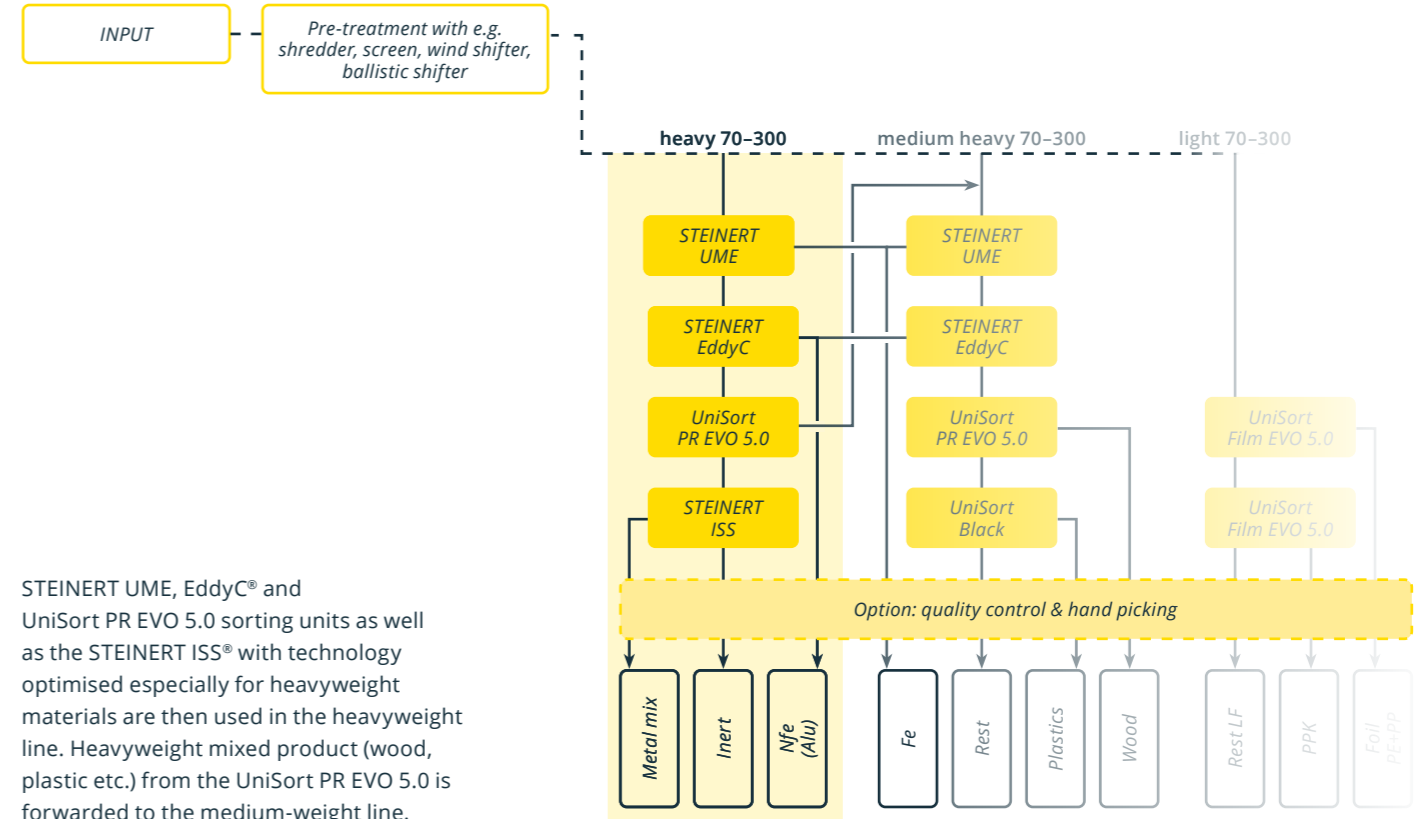

Film product from UniSort Film EVO 5.0

Paper & cardboard product from UniSort Film EVO 5.0

Process Flow Diagram

INPUT → Pre-treatment with e.g. shredder, screen, wind shifter, ballistic shifter

heavy 70–300 | **medium heavy 70–300** | **light 70–300**

heavy 70–300	medium heavy 70–300	light 70–300
STEINERT UME	STEINERT UME	
STEINERT EddyC	STEINERT EddyC	
UniSort PR EVO 5.0	UniSort PR EVO 5.0	UniSort Film EVO 5.0
STEINERT ISS	UniSort Black	UniSort Film EVO 5.0

Option: quality control & hand picking

Outputs: Metal mix | Inert | N/e (Alu) | Fe | Rest | Plastics | Wood | Rest LF | PPK | Foil PE+PP

SEPARATING THE MEDIUM-WEIGHT FRACTION

Process step: Separating metal, wood and plastic products

Non-ferrous metal product from STEINERT EddyC

Wood product from UniSort PR EVO 5.0

Plastic product from UniSort PR EVO 5.0

Refuse-derived fuel product from UniSort PR EVO 5.0

Ferrous metal product from STEINERT UME

STEINERT UME, EddyC® and UniSort PR EVO 5.0 sorting units with technology optimised especially for medium-weight materials are then used in the medium-weight line.

Process flow diagram

INPUT → Pre-treatment with e.g. shredder, screen, wind shifter, ballistic shifter

heavy 70–300 | medium heavy 70–300 | light 70–300

heavy 70–300:
STEINERT UME → STEINERT EddyC → UniSort PR EVO 5.0 → STEINERT ISS

medium heavy 70–300:
STEINERT UME → STEINERT EddyC → UniSort PR EVO 5.0 → UniSort Black

light 70–300:
UniSort Film EVO 5.0 → UniSort Film EVO 5.0

Option: quality control & hand picking

Outputs: Metal mix | Inert | Nfe (Alu) | Fe | Rest | Plastics | Wood | Rest LF | PPK | Folie

SEPARATING THE HEAVYWEIGHT FRACTION

Process step: Separating metal and mixed products

Non-ferrous metal product from STEINERT EddyC

Mix of plastics and wood from the UniSort PR EVO 5.0

Mixed metal from STEINERT ISS

Heavyweight material/ residue – minerals

Ferrous metal product from STEINERT UME

STEINERT UME, EddyC® and UniSort PR EVO 5.0 sorting units as well as the STEINERT ISS® with technology optimised especially for heavyweight materials are then used in the heavyweight line. Heavyweight mixed product (wood, plastic etc.) from the UniSort PR EVO 5.0 is forwarded to the medium-weight line.

INPUT

Pre-treatment with e.g. shredder, screen, wind shifter, ballistic shifter

heavy 70–300 · medium heavy 70–300 · light 70–300

STEINERT UME — STEINERT UME
STEINERT EddyC — STEINERT EddyC
UniSort PR EVO 5.0 — UniSort PR EVO 5.0 — UniSort Film EVO 5.0
STEINERT ISS — UniSort Black — UniSort Film EVO 5.0

Option: quality control & hand picking

Metal mix · Inert · Nfe (Alu) · Fe · Rest · Plastics · Wood · Rest LF · PPK · Foil (Film)

SEPARATING THE UNDERSIZE FRACTION

Process step: Separating metal and mineral products

Ferrous metal product from STEINERT UME
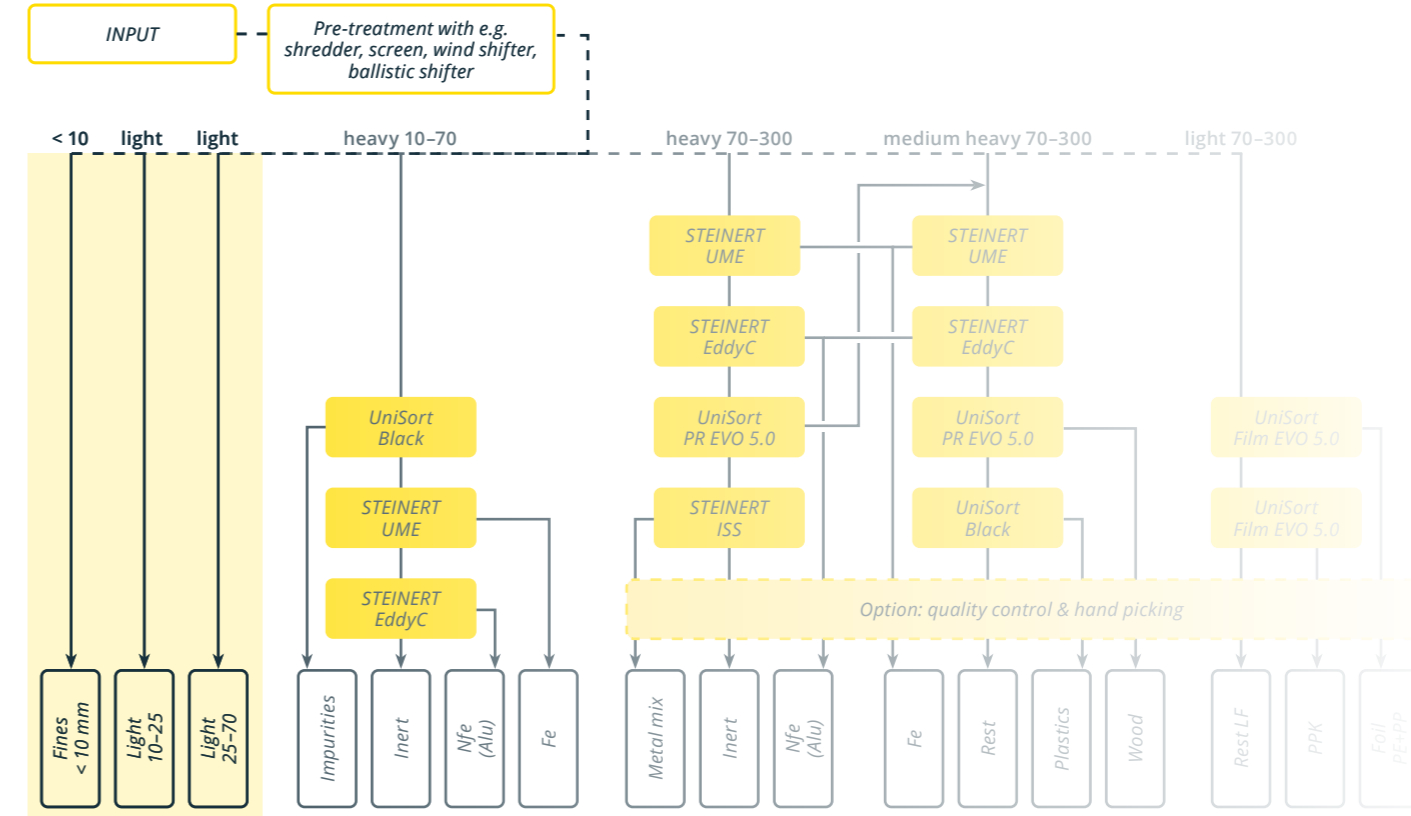

Non-ferrous metal product from STEINERT EddyC

Minerals after cleaning with STEINERT magnets and UniSort Black

INPUT

Pre-treatment with e.g. shredder, screen, wind shifter, ballistic shifter

light | light | **heavy 10–70** | heavy 70–300 | medium

STEINERT UME

STEINERT EddyC

UniSort PR EVO 5.0

STEINERT ISS

UniSort Black

STEINERT UME

STEINERT EddyC

Optional

Light 10–25 | Light 25–70 | Impurities | Inert | Nfe (Alu) | Fe | Metal mix | Inert | Nfe (Alu) | Fe
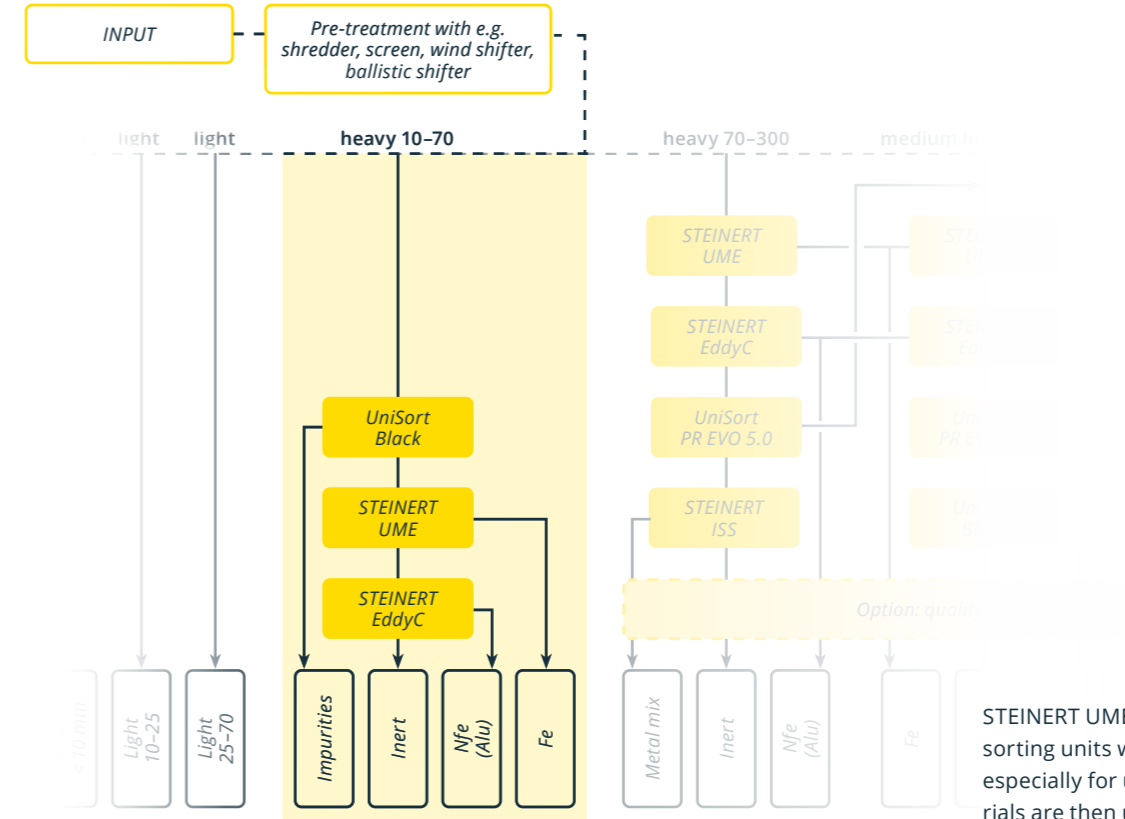
STEINERT UME, EddyC® and UniSort Black sorting units with technology optimised especially for undersize heavyweight materials are then used in the undersize line.

SEPARATING THE FINE AND LIGHTWEIGHT FRACTION

Process step: Separating other undersize products

Undersize < 10 mm

Fine material 10–25 mm

Undersize lightweight material 25–70 mm

OUR PRODUCTS
for sorting valuable residues

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 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 BR

The STEINERT BR is a magnetic head pulley that can be integrated into an existing conveyor belt as a machine component. Working alongside the self-cleaning overhead suspension magnets, this allows materials with low levels of magnetism to be sorted out of the flow of material.

UniSort PR EVO 5.0

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.

OUR PRODUCTS
for sorting valuable residues

UniSort Film EVO 5.0

Particularly light materials, such as paper and film, require a specially tailored sorting technology, which is provided by the UniSort Film EVO 5.0. The UniSort Film EVO 5.0 is used mainly to sort valuable residues such as paper and films to high levels of precision and quality.

UniSort Black

The UniSort Black is used wherever NIR technology is needed to sort valuable residues and where black and dark-coloured plastics are also to be detected alongside the plastics which can traditionally be detected with NIR. It is designed, in particular, for producing a black plastic product or generating plastic-free mineral fractions.

STEINERT ISS®

The STEINERT ISS® induction sorting system is an addition to magnetic sorting and eddy-current separation for recovering residual metals from a mix of materials. It can be deployed where the focus is on producing recoverable metal concentrates or producing a metal-free residual fraction.

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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