SORTING SCRAP ALUMINIUM
For the production of premium qualities with the new STEINERT XSS® T EVO 5.0
Aluminium can be 100% recycled. Using secondary aluminium, also known as green aluminium, cuts energy use in production by up to 90% compared with virgin material.

If recovered aluminium (recycled aluminium) is being used to produce new products, aluminium manufacturers need their secondary raw materials to display consistently high levels of purity. This challenge can be met using a sorting system designed for many materials.

The STEINERT XSS® T EVO 5.0 sorting machine can be used to separate free heavy metals, aluminium compounds, free magnesium and wrought and cast aluminium parts. The new features of the machine can be found on the interior: in the technically advanced details. As a special benefit, we are offering customers who buy the new STEINERT XSS® T EVO 5.0 a 4-year warranty on the X-ray components, ensuring them a safe investment and low operating costs.

Typical sorting materials in a “scrap aluminium” application:
+ Profiles and plates
+ Non-ferrous metals from incineration bottom ash (down to 5 mm)
+ End-of-life vehicle (ELV) fractions (Zorba/non-ferrous metal concentrate) from shredder plants
+ Products from dense media separator systems
+ Pre-concentrated drink cans and containers
+ New production waste and rejected material

Alongside core X-ray technology components, we also supply the sorting machines needed for the upstream recovery processes:
+ STEINERT EddyC® non-ferrous metal separator
+ Magnets for separating ferrous parts
Separation of heavy and light metals in the incineration bottom ash

Recovery of non-ferrous metals followed by aluminium purification

X-ray transmission detects magnesium and ensures a pure aluminium product

X-ray sorting system separates aluminium shredder sorting material

WORLDWIDE, THE X-RAY SORTER FOR HIGH THROUGHPUTS AND PRODUCT PURITY
THE HEART OF THE SORTING PLANT:
STEINERT XSS® T EVO 5.0 X-ray sorting system

X-GEN FOR OPERATIONAL RELIABILITY
Durable X-ray source (tubes) and XRT X-ray sensors with 4-year warranty*

HR VALVE PITCH – VALVE BAR FOR PRECISE SORTING
Optional: high-resolution valve distance of 6.25 mm for fine material

*Up to 5,000 h/y of operation, requirement of qualified services must be undertaken in accordance with the STEINERT service advise.
**AUTO X CLEAN FOR RELIABLE DETECTION**
Automatic cleaning of the X-ray scan area

**AXM FOR SORTING QUALITY**
Automatic X-ray monitoring and calibration of the X-ray sensors for consistently high detection and sorting quality

**MDE FOR EVEN MORE DISTINGUISHING CHARACTERISTICS**
Advanced control and software for multi-layer data evaluation – allows special sorting tasks, such as magnesium detection and high-resolution object recognition and classification

The STEINERT XSS® T EVO 5.0 technology is available in the STEINERT KSS | XT CLI combination sensor sorting system – for special sorting tasks and advanced object recognition!
SORTING SYSTEM FOR ALUMINIUM SHREDDERS AND SECONDARY SMELTERS

Simplified flow chart of a large facility which produces ready-to-smelt products online, with two separation stages with STEINERT XSS® T EVO 5.0 on three lines.
Shredding in 1-2 stages

Screening in 2 stages

STEINERT UME/STEINERT MTE

Iron (Fe)

Oversize

Aluminium profiles & plates

STEINERT EddyC FINES

Fine non-ferrous metal

STEINERT EddyC

Fine grain

Undersize

Medium grain

Coarse grain

Residues

Wrought/premium aluminium

Heavy metal & high-alloy aluminium

Cast aluminium & optional magnesium*

CLEANING ALUMINIUM

RECOVERING ALUMINIUM & SEPARATING OUT IMPURITIES

SORTING ALUMINIUM PROFILES/PLATES

*Significant reduction in free magnesium using STEINERT XSS T EVO 5.0. Free magnesium content can be concentrated separately in the wrought or cast products.
ALUMINIUM SORTING FROM END-OF-LIFE VEHICLE (SHREDDER MATERIAL) AND MIXED SCRAP ALUMINIUM

Basic concept involving 2-stage separation using STEINERT XSS® T EVO 5.0 for aluminium and as an option with X-ray fluorescence (XRF) for separating heavy metals in typical grain sizes of 10–120 mm.
ELV & scrap mix
ASR downstream
including magnets

Screening
STEINERT EddyC
Coarse fraction
Zorba/non-ferrous metals, Si/Cu/Zn low

Screening
STEINERT EddyC
Medium grain
Zorba/non-ferrous metals, Si/Cu/Zn mixed

Screening
STEINERT EddyC
Undersize
Zorba/non-ferrous metals, Si/Cu/Zn high

Oversize manual sorting

Fine Zorba

Next processes: STEINERT ISS & STEINERT KSS

XRF batch or starter concept
Special case of X-ray fluorescence (XRF):
Use of STEINERT KSS | XF L or STEINERT CHUTEC | XF L for smaller plants and material volumes to sort aluminium and heavy metals in several stages using 1–2 machines. Of course, XRF technology displays its greatest efficiency when sorting heavy metals.

XRF batch or starter concept
STEINERT KSS | XF L
STEINERT CHUTEC | XF L

Copper (Au/Ag)
Zinc
Brass/CrNi etc.

XRF batch or starter concept
STEINERT XSS-T EVO 5.0
Heavy metal & high-alloy aluminium

STEINERT XSS-T EVO 5.0
Cast aluminium & optional magnesium

Wrought/premium aluminium
Manual control

Heavy metal stage

Cleaning aluminium and sorting heavy metals

End-of-life vehicle (ELV) – Batch concept with 1 line each
ALUMINIUM FROM INCINERATION BOTTOM ASH: ZORBA AND NON-FERROUS SEPARATION

Basic concept involving 2-stage separation using STEINERT XSS® T EVO 5.0 for aluminium and as an option with X-ray fluorescence (XRF) for separating heavy metals in typical grain sizes of 5–80 mm
**RECOVERING ALUMINIUM AND NON-FERROUS METAL & SEPARATING OUT IMPURITIES AND OTHER METALS**

- Pre-sorted non-ferrous metals from incineration bottom ash
- Screening
  - Coarse fraction
    - STEINERT EddyC
      - Zorba/non-ferrous metals
    - Medium grain
      - STEINERT EddyC
      - Zorba/non-ferrous metals
      - STEINERT ISS for separating stainless steel
  - Oversize
- Undersize
  - Fine grain
    - STEINERT EddyC FINES
    - STEINERT XSS-T EVO 5.0
      - Zorba fine fraction
      - Aluminium
      - Heavy metals

**CLEANING ALUMINIUM AND SORTING HEAVY METALS**

- X-ray technology expansion:
  - STEINERT XSS-T EVO 5.0
    - Heavy metal & high-alloy aluminium
  - Heavy metal stage
    - STEINERT XSS-T EVO 5.0
      - Cast aluminium
      - Premium aluminium extrusion
      - Manual control
      - Medium and coarse fraction
        - STEINERT KSS | XF L
          - Zinc*
          - Copper* (Au/Ag)
          - Stainless steel*
        - Medium and fine fraction
          - STEINERT CHUTEC | XF L
            - Zinc*
            - Copper* (Au/Ag)
            - Brass*

*The target fractions and products depend on the customer's trading aims. The exact grain sizes on the sorting machines are variable.*
ALUMINIUM PRODUCTION SCRAP AND PRE-TREATED HIGH-GRADE FRACTIONS

Simplified flow chart of sorting of aluminium alloys using the STEINERT LSS | LIBS line sorting system.
Sample products with up to 6 discharges in one step operation.
The sorted products quoted are examples only and can be adapted to quality objectives.
OUR MOST IMPORTANT PRODUCTS
taking you to 99.9% pure aluminium

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.
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
taking you to 99.9% pure aluminium

Cleaning into pure-grade aluminium:

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

STEINERT KSS | XT CLI
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.
Separation of aluminium and heavy metals (for small material volumes):

**STEINERT KSS | XF L**

This multi-sensor sorting system with X-ray fluorescence technology (XRF) can also be used to clean aluminium. It is intended primarily for smaller projects and material volumes; especially in cases where aluminium, and in particular the heavy metals, are to be separated by material type with just 1–2 machines (in several stages).

**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.

Separation of aluminium alloys:

**STEINERT LSS | LIBS**

The LIBS (Laser-Induced Breakdown Spectroscopy) technology allows precise determination and quantification of the alloy elements, making it possible to distinguish between a large number of different alloy types. With wrought alloys, for example, it can distinguish between classes such as 5XXX and 6XXX.
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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