LIFE CDW CIRCLE

VALUE-ADDED RECYCLED MATERIALS FROM CONSTRUCTION AND DEMOLITION WASTE

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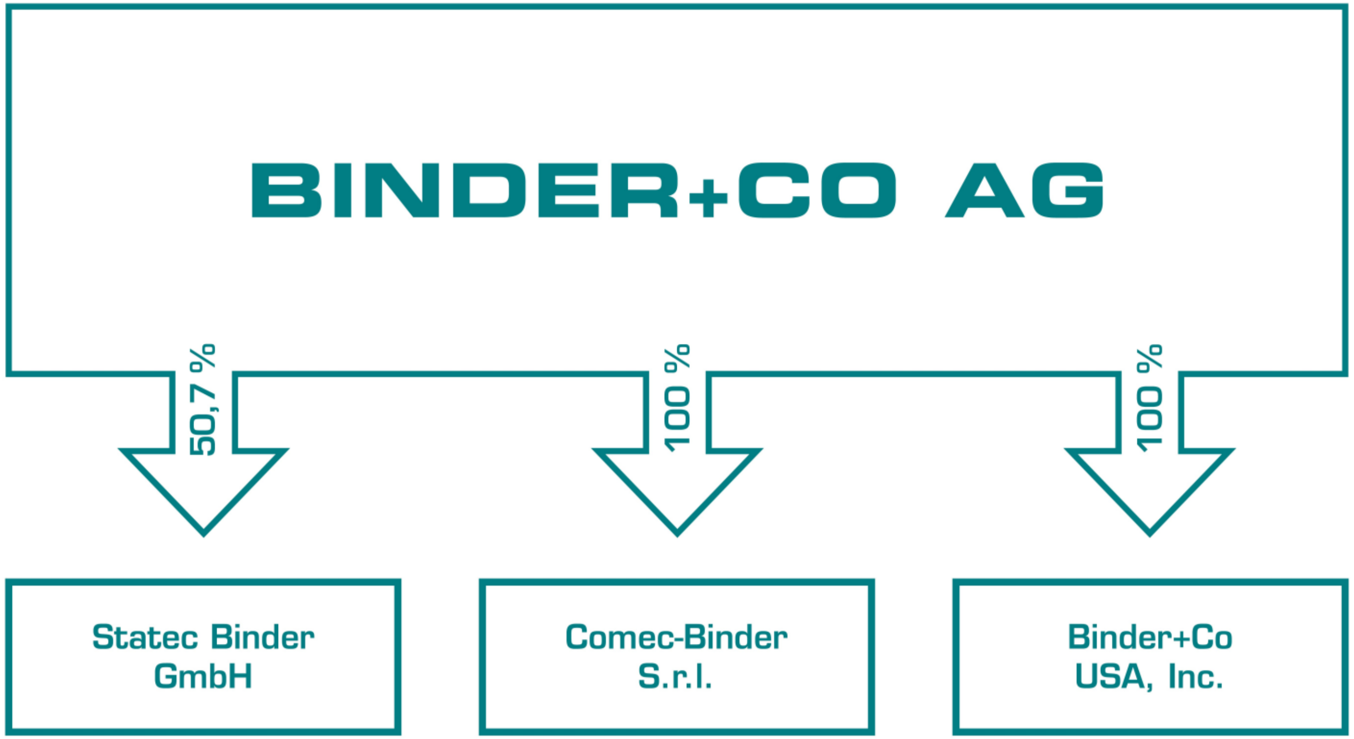
Public event, 26 January 2024, ESEB Auditorium, Brescia

General overview Binder+Co

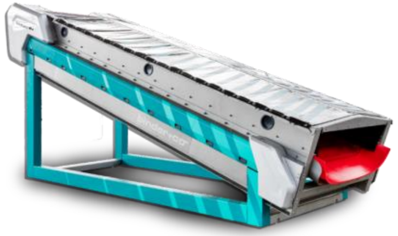
- Who are we?

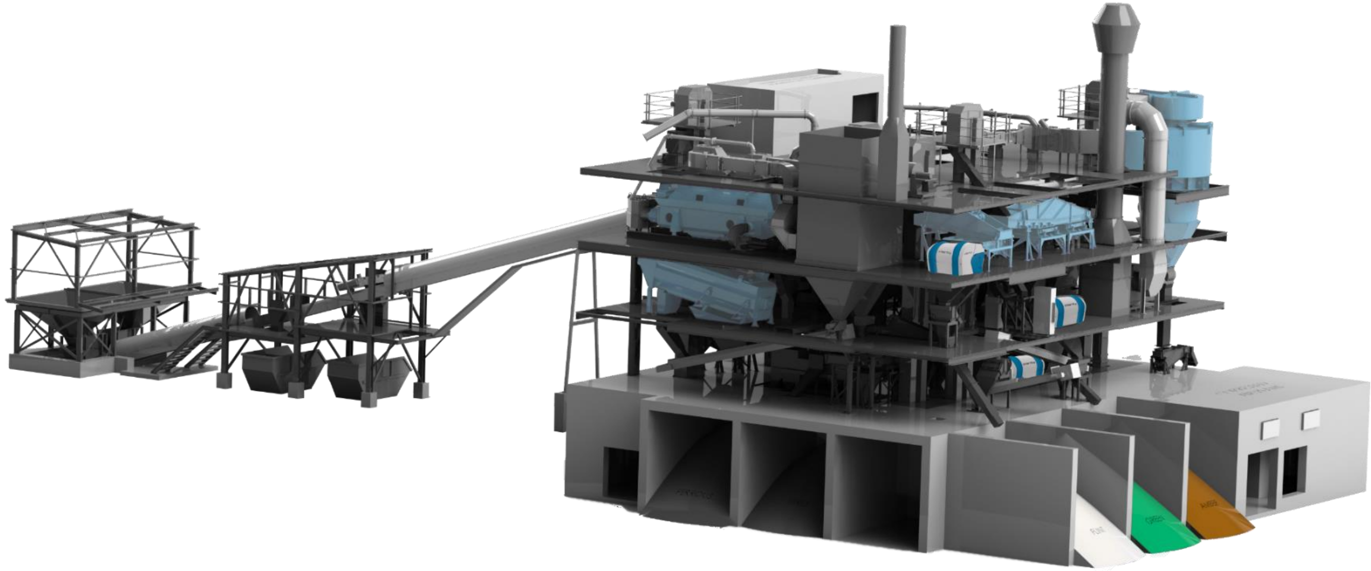
- Role in Project
    - Supplying and commissioning a sensor based sorter with the latest technology
    - Dissemination of the result
    - Using the plant as reference for further projects

- Team
    - Thomas Kutschera; Internal Project manager
    - Alfred Kalcher; Head of Sales
    - Günter Hammerer; Sales Manager Italy
    - Robert Neuhold; Technical Product Owner
    - Georg Weingrill; Product Manager



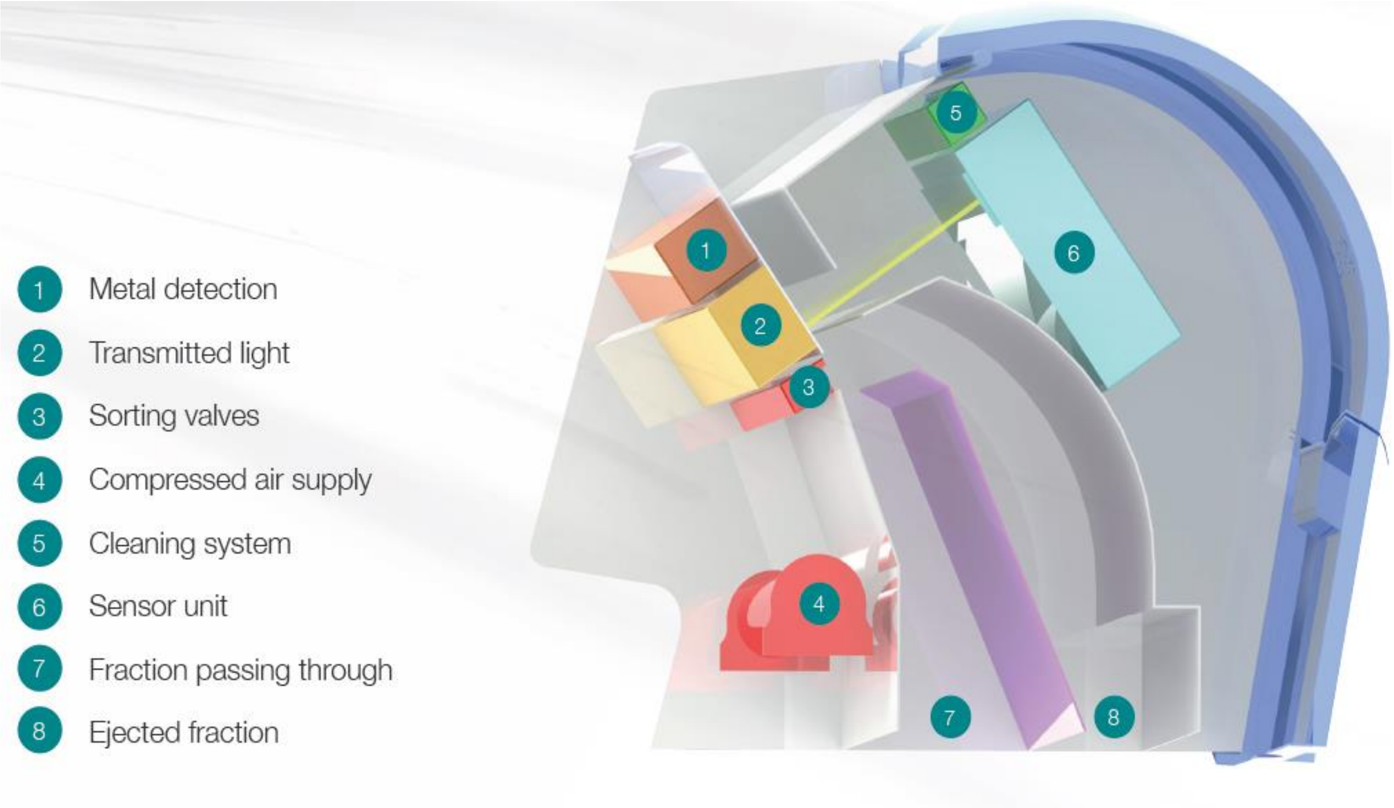
- Headquarters in Gleisdorf, Austria
- ~380 Employees
- Mineral processing
- Environmental technologies
- Turnover 130 Mio. EUR





Supported by

Sensorbased Sorting Introduction: Clarity/Minexx



Possible Machine Configurations:

- Chute or belt - sorter
- Machine dimension
- Computing unit and algorithm complexity depth
    - Standard
    - Artificial intelligence (AI)

- Type and resolution of sensor
    - X-Ray
    - UV
    - VIS
    - NIR
    - LIBS
    - Induction (Metal detection).

- Illumination/Camera constellation
    - Reflection / Absorption
    - Transmission
    - Fluorescence

- Diverting Apparatus
    - Air valves (typically) or mechanical flaps (rare)
    - Valve resolution
    - Single or double valve bank
    - Valve position relative to material flow
        - Beneath/above
        - Front/back

Ejection Valves

Nozzle distances

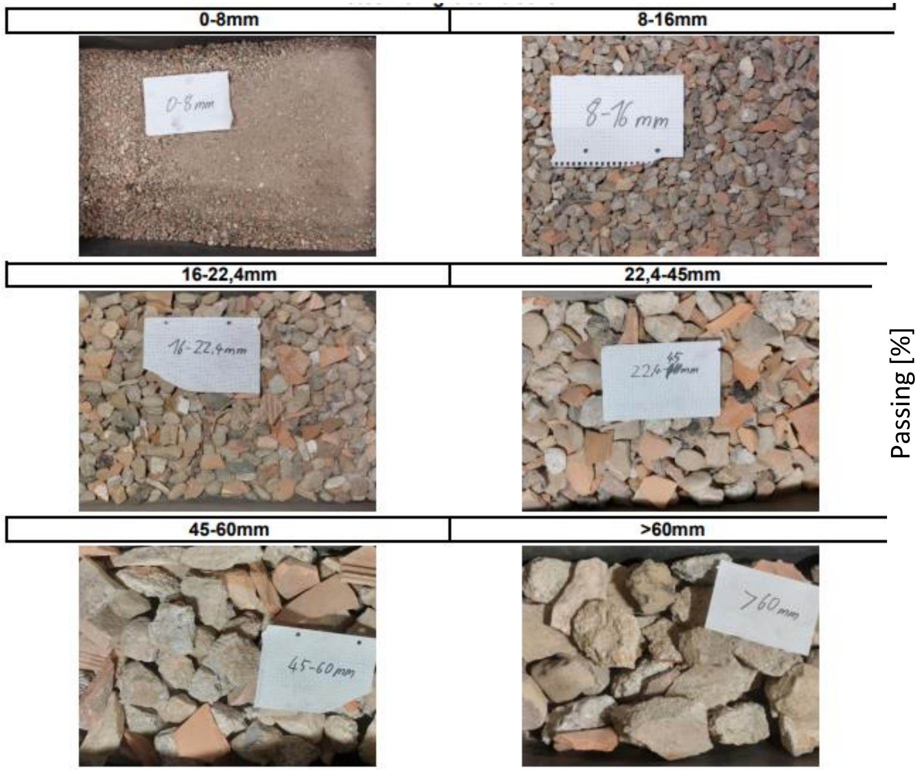
- 3,12 mm
- 6,25 mm
- 8,33 mm
- 12,5 mm
- 25 mm
- 25 mm (double row)
- 25 mm combined with 6,25 mm (double row)

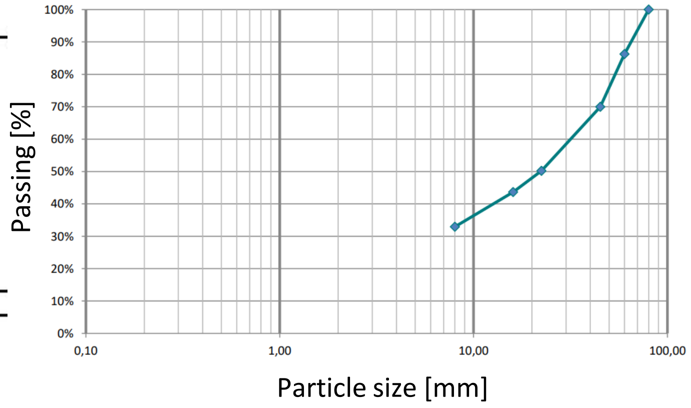
Influence on design and configuration

- Mass flow [t/h]
- PSD [mm]
- Aspect Ratio
- Density
    - Particle density [g/cm³]
    - Area density [kg/m²]
    - Bulk density [t/m³]
- Moisture condition
    - Dry/moist/dripping wet [%]

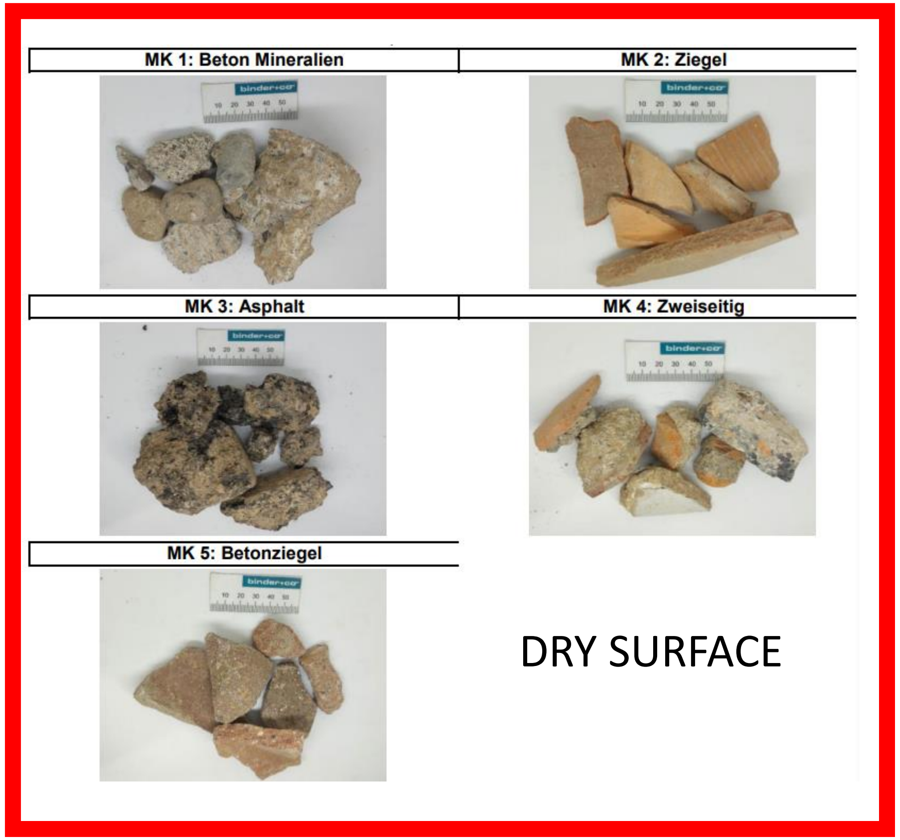
- Mass fraction distribution of the material classes [%]

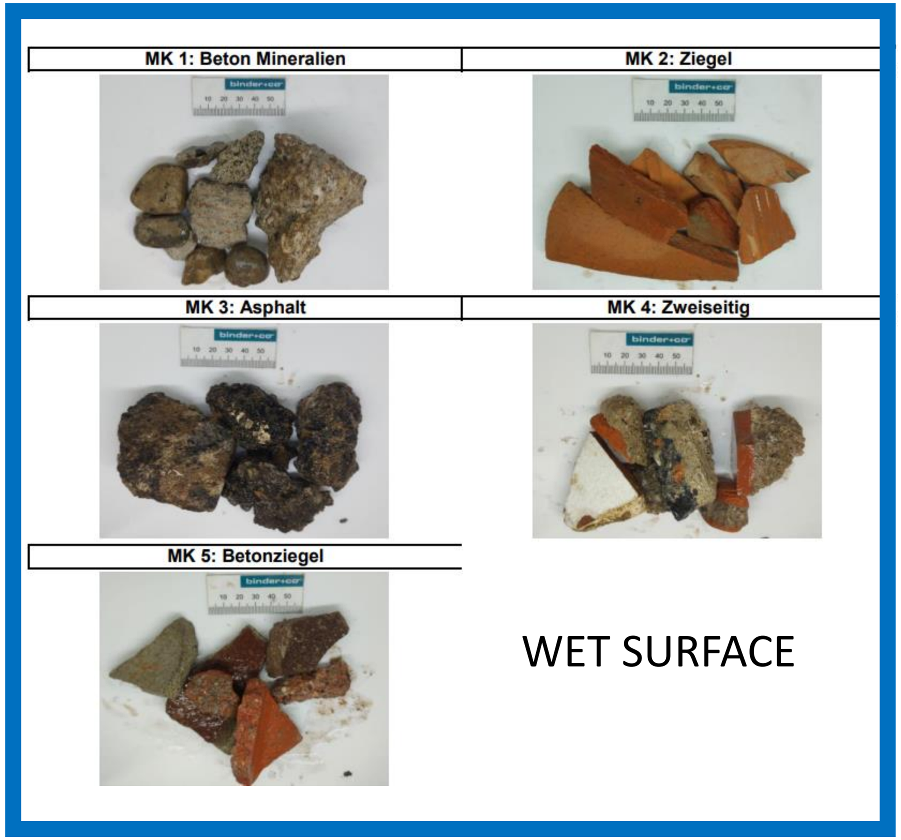
- Mode of operation
    - Continuous or discontinuous mode
    - Cleaning of preconcentrate
    - Positive sorting
    - Scavenging





Surface Conditions: Change of Contrast and Colour

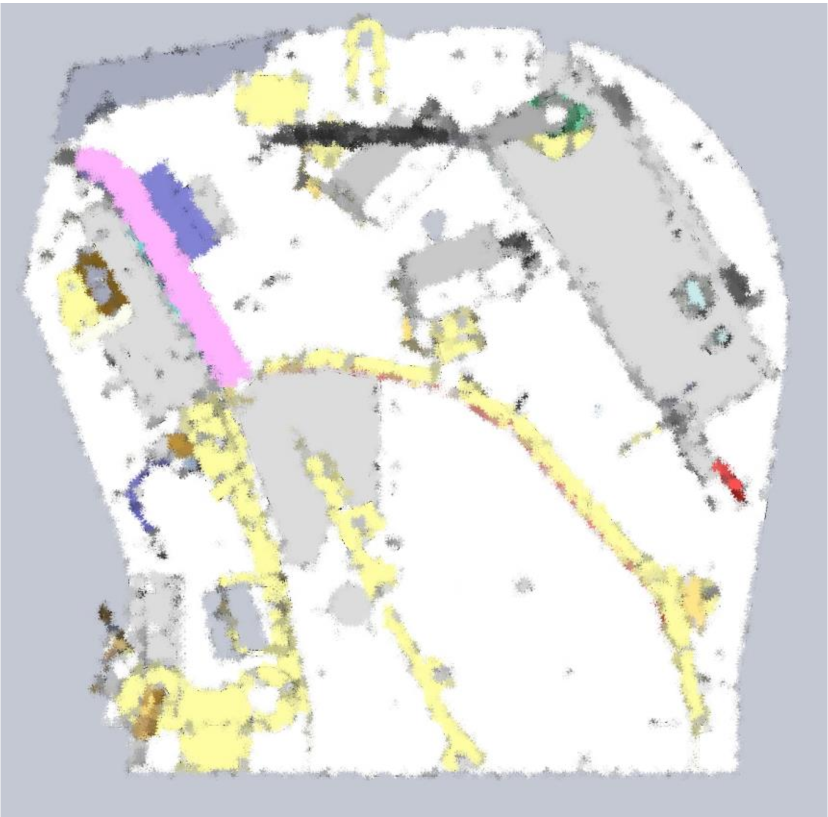




Machine Technical Data

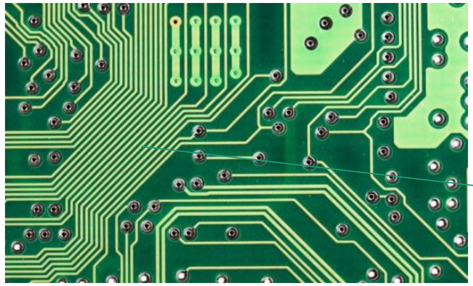
The selected machine configuration for the project:

- 1400 mm sorting with
  - Split at 700 mm (fine/coarse lane)
- Integrated AI-Computing
- Reflection-Mod
- Metal detection unit
- Automated cleaning device
- 25 mm valve resolution single row



Artificial Intelligence

- Superior automated interpretation of visual and sensory information
- Complex algorithm architecture
- Capable of finding features like
  - Patterns
  - Outlines and contours
  - Even tiny impurities
  - Combining features for enhanced classification
- Almost all material have optical finger prints, even if they are difficult to articulate



AI Example: Separation of dark objects

- Black pebbles
- Black Asphalt

- Thank you very much for your attention