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Mechanical biological treatment

technology for MBT plants

MBT plants are designed to process mixed household waste as well as commercial and industrial wastes. MBT systems enable the recovery of materials (PET, film, metals, paper, glass) contained within the mixed waste and facilitate the composting of the biodegradable component of the material.

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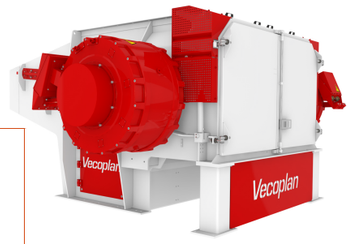
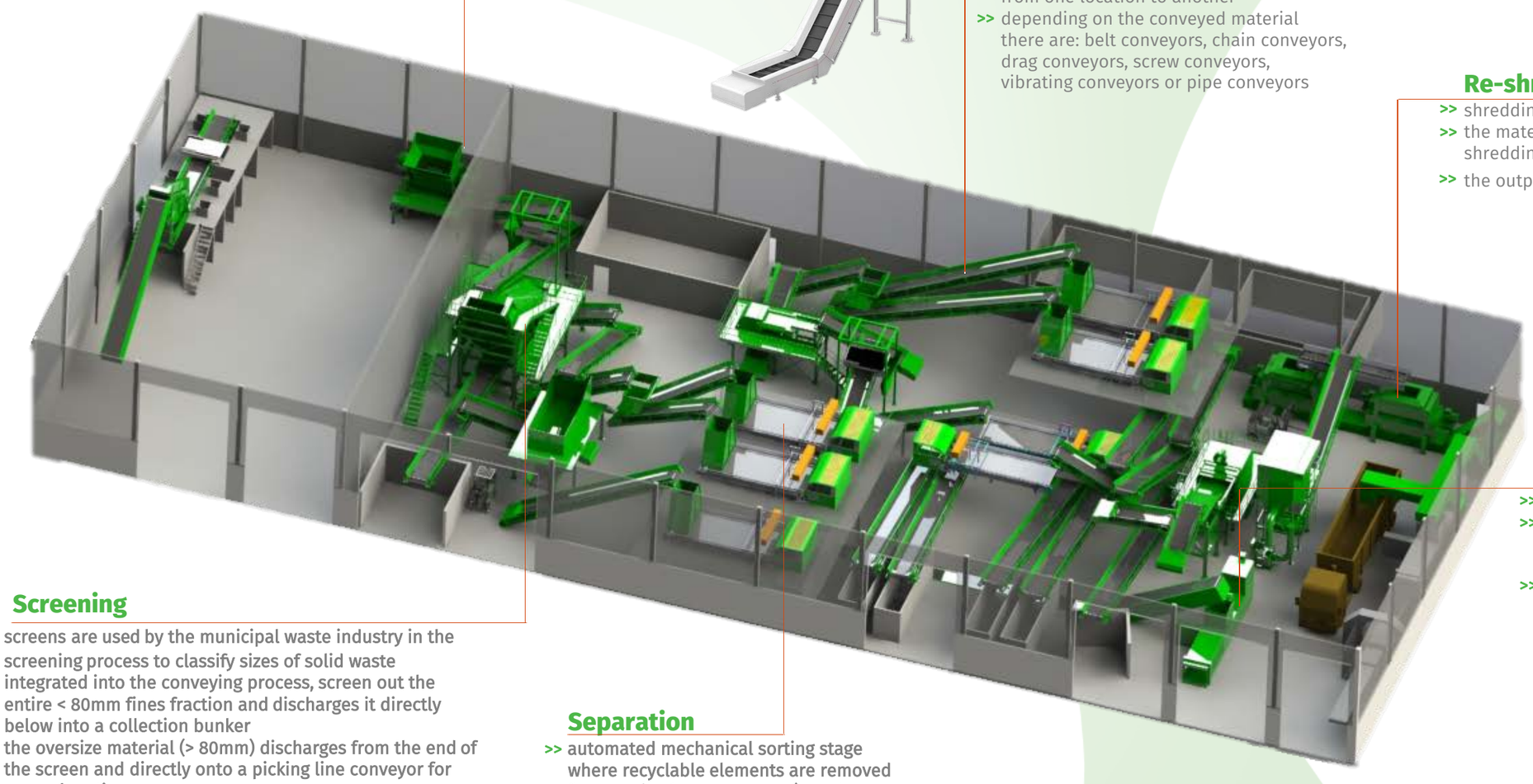
The reference sorting plant

Pre-shredder / Bag opener



- pre-shredder is placed at the waste reception hall, the material is loaded into the feed hopper and reduced to size of approx. 300 mm
- commonly used to process materials into different sizes for separation, ex.: wood, paper, plastics, textiles, packaging, municipal solid waste and many other materials
- bag opener is used to tearing waste bags



Mechanical sorting stage

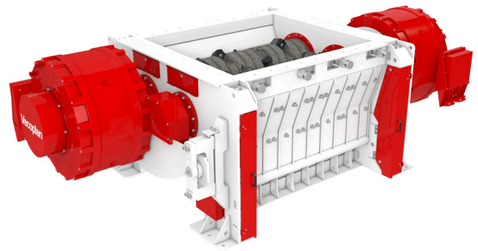
removes recyclable elements from a mixed waste stream, whilst allowing producing an RDF fraction from the residuals for potential use in the cement kilns or thermal combustion power plants.
It typically involves shredders, conveyors, eddy current separators and screens, or the sorting is done manually at hand picking stations.

Conveying system

- conveyor is an unit that convey bulk material from one location to another
- depending on the conveyed material there are: belt conveyors, chain conveyors, drag conveyors, screw conveyors, vibrating conveyors or pipe conveyors

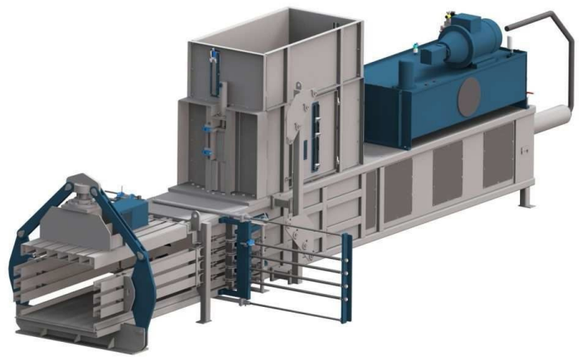
Re-shredder

- shredding machine for pre-shredded materials
- the material is loaded from belt conveyor after pre-shredding, sorting cabin and separators
- the output material can be used as an alternative fuel



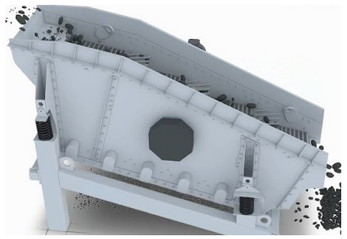
Baling press

- is used for compacting waste
- balers transform waste into solid blocks of recyclable material, enabling recyclers to collect it easily and economically
- recyclates are to be baled for ease of storage and transportation



Screening

- screens are used by the municipal waste industry in the screening process to classify sizes of solid waste
- integrated into the conveying process, screen out the entire < 80mm fines fraction and discharges it directly below into a collection bunker
- the oversize material (> 80mm) discharges from the end of the screen and directly onto a picking line conveyor for manual sorting



Separation

- automated mechanical sorting stage where recyclable elements are removed from a mixed waste stream (metals, paper, plastics, glass etc.)
- wide range of separators: ferrous, non-ferrous, air separator, metal separators etc.

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Biological treatment stage

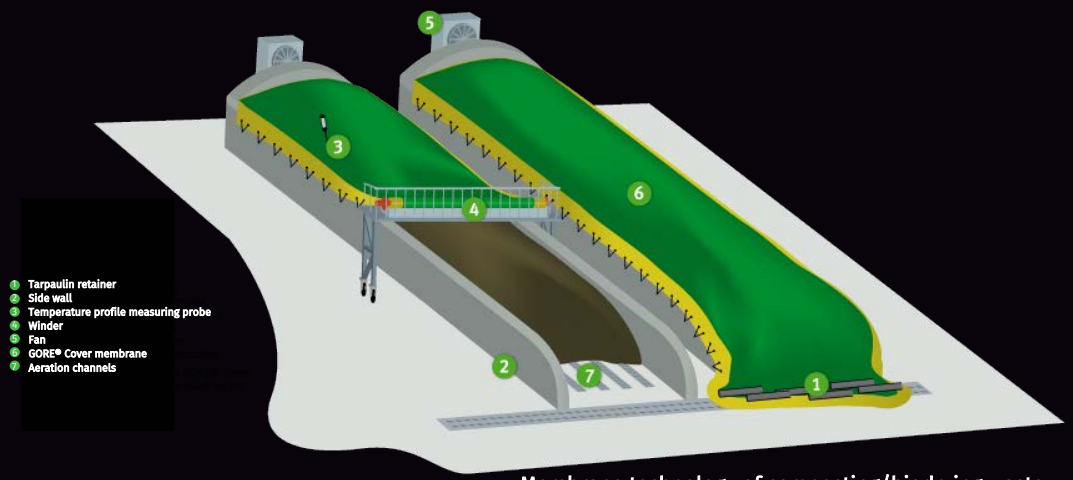
After mechanical sorting the biodegradable fraction is diverted for further processing. Biological treatment refers to:

- >> composting
- >> anaerobic digestion
- >> biodrying

Composting the organic component is broken down by naturally occurring aerobic microorganisms. They breakdown the waste into carbon dioxide and compost which can be used as fertilizer or soil improver in agriculture.

Anaerobic digestion anaerobic microorganisms break down the biodegradable component of the waste to produce biogas and soil improver. The biogas can be used to generate electricity and heat.

Biodrying waste material undergoes a period of rapid heating through the action of aerobic microbes. These systems are often configured to produce a refuse-derived fuel where a dry, light material is advantageous for later transport and combustion.



Membrane technology of composting/biodrying waste

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