MBT
MECHANICAL-BIOLOGICAL TREATMENT
THE TASK
EXPERTISE
PROCESSES
TECHNOLOGIES
THE ENTIRE SYSTEM
**THE TASK**

Mechanical-biological treatment (MBT) is the right answer to the question of how we can make landfills more environment-friendly. If we want to reduce emissions from mixed-waste landfills, we need to start by recycling materials, using the energy in waste, and creating a stable residue for landfiling.

It is the organic material in waste that causes most of the problems at landfills. This must be reduced and stabilised through composting. An MBT system can do this.

The end product of mechanical-biological treatment is a stable or dried composted residue, recyclable materials, and refuse-derived fuels.

Komptech machines are in use around the world to help with this task. Our products are at home in all major MBT process steps.

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**01 Municipal Solid Waste (MSW)**  
**02 Commercial waste, similar to household waste**  
**03 Sewage sludge and much more**
EXPERTISE

The key steps in varied and complex MBT systems

Shredding reduces the input material to the desired particle size.

Screening separates large from small and prepares the material for subsequent steps.

Stabilisation decomposes or dries out the organic components.

Recycling reclaims valuable materials from the waste, and saves natural raw materials.

Refuse-derived fuels make it possible to utilise the energy in non-recyclable materials.

Post-processing helps improve the quality of MBT output.

Komptech GmbH

Komptech is a leading international manufacturer of machines and systems for the mechanical and mechanical-biological treatment of solid waste and biomass, and the processing of woody biomass for use as a renewable fuel.

Our product range comprises over 30 different types of machines, which cover the key steps in waste handling and biomass processing.

All share a practical focus and pioneering spirit. Practical focus means that they are designed around our customers’ needs, not our own. Pioneering spirit means working towards the future, by further cultivating our accustomed high development expertise.
01 Shredding
02 Screening
03 Stabilisation, open and closed
04 Recycling
05 RDF production
06 Post-treatment

All figures in percentage by weight

30% Decomposition loss
30% Compost-like output
The MBT process
There are many important steps in waste treatment, making the MBT process varied and complex. No two MBT systems are alike.

This simplified schematic shows the type of MBT process most frequently used in central Europe, aerobic MBT with RDF production. Other variants are shown on the following pages.

In splitting, the material is shredded (01) and screened (02), giving two fractions, the undersize and oversize screen fraction. These must be treated separately.

Composting the undersize screen fraction (03) creates a landfillable compost end product. With its increased density and the decomposition loss, this saves ever scarcer landfill space.

The oversize fraction is used to make a refuse derived fuel (04 and 05). Contraries can be removed and recyclables recovered.

Post-processing (06) helps improve the quality of MBT output materials.
1 AEROBIC MBT

The standard MBT process in countries without landfill ban.

2 AEROBIC MBT WITH RDF PRODUCTION

The standard MBT process in countries that ban landfilling.
3 ANAEROBIC MBT WITH RDF PRODUCTION

MBT with biogas production in countries that ban landfilling.

30% Compost-like output

0-20% Recyclables/contraries

20-40% RDF

4 DRY STABILATE MBT WITH RDF PRODUCTION

The MBT process that gives maximum RDF and minimum landfill.

30% Decomposition loss

0-20% Recyclables

20% Landfill 40-60% RDF
• Reduction of even difficult materials possible
• Tough and insensitive to contraries
• Stationary machines with optional hydraulic or mechanical drive
• Different shredding units for a perfect fit with the application
• 01 U-tooth (universal)
  02 F-tooth (fine)

TERMINATOR

A tough pre-shredder

The task
Pre-shredding brings the input material to a consistent particle size and prevents overlengths that might cause problems further on. Robust resistance to contraries is very important in pre-shredding.

In detail
Drive can be hydraulic or mechanical. The hydraulic version has constant power control and stepless shaft speed adjustment, while the mechanical version uses a 2-speed reversing gearbox.

The solution
The Terminator, with its special tooth geometries and innovative tool mounting, meets these requirements perfectly. Four different tool variants and stepless cutting gap adjustment allow sizing of the output for its intended purpose.
Screening separates the shredded input material by size, to prepare for further processing to recover recyclables and energy from the waste. Reliable functioning and high separation precision are the main requirements screening technology must meet.

The solution
Komptech drum and star screeners with adjustable screen hole sizes meet these requirements. Combinations of multiple screeners can accomplish several screening steps in a very small space. This is of great advantage for subsequent recovery of recyclables.

In detail
On star screens, the particle size can be adjusted with the press of a button. On Komptech drum screens, also known as trommels, anti-dirt strips and feed worms configured for the material and throughput provide blockage-free operation.
• Closed tunnel composting
• Covered flat-top windrows
• Final composting, enclosed, roofed, or open
• Extra-large turning drum for high throughput and excellent mixing
• Swivel cabin - easy road transport and convenient entry
• The right machine for the job - three sizes and many options

TOPTURN AND TUNNEL

Fast stabilisation

The task
Composting aims at stabilising the material quickly and with low emissions. The end product can be wet, for landfilling, or dry, for incineration.

The solution
The first step is often closed composting in tunnels or enclosed windrows. Once the emission spikes from the fast-decomposing substances have subsided, final composting follows with the aid of a windrow turner. Regular turning makes composting or drying proceed evenly and efficiently. The Topturn is ideal for the job, as its robust functionality lets it cope with the most demanding situations.

In detail
Options like watering and lateral displacement of the compost allow fine-tuning of the process.
RECYCLING

MECHANICAL-BIOLOGICAL TREATMENT

• Cleaning recyclables
• Removing contraries
• Central separation of input material into final processing lines
• Adjustable separation limit
• High resistance to contraries
• Low air movement for low dust production
• Long life, low operating costs

BALLISTOR

Recyclable recovery with high selectivity

The task
For waste materials to be recycled, they must first be separated from the waste stream, and then cleaned.

The solution
Screening and ballistic technology separates waste into multiple fractions. Without this, it is not possible to separate recyclables from contraries in the subsequent sorting step. For example, PET can be easily recovered from the rolling fraction output by the Ballistor, while aluminium can be readily extracted from a 50-100 mm screen fraction.

In detail
Its contrary-resistance and adjustable separation criteria make the Ballistor useful for a wide range of applications. Since it generates little air movement, little dust is produced.
• Low rotor speed for low noise, dust and vibration
• Continuous material feed for consistently low power consumption
• Simple blade change and minimal maintenance downtime
• Swing-away counter roller for good service accessibility

RASOR

Energy-efficient RDF production

The task
Energy-efficient RDF production requires not only effective contrary removal, but also fine shredding with steady power uptake.

The solution
The Rasor’s three worms draw the contrary-free material evenly into the rotor. The power consumption of the machine is correspondingly constant. At 150 rpm, a pulling endless cut shreds the material with a high throughput rate.

In detail
The blades can be turned repeatedly, and routine cutting gap adjustment is quick and easy. The screen basket surrounding the rotor lets operators produce 60 mm grain RDF for fluidised bed combustion or 30 mm grain for cement kilns.
The task
Some products of an MBT system require post-processing in order to ensure that all of the material is under a certain particle size. In addition, post-processing saves energy costs in the fine shredding of refuse derived fuels.

The solution
Due to their low space needs, Multistar star screens are popular for post-processing. They screen compost-like MBT output and refuse derived fuels reliably, without using large amounts of energy.

In detail
The efficient, patented Cleanstar system keeps these star screens working efficiently and reduces maintenance needs. At each turn, an extra-long finger on every star cleans its assigned gap.

MULTISTAR
Post-processing for higher quality

- High performance - low space requirement
- Fast, simple particle size adjustment
- Patented "Cleanstar" cleaning system
- Low energy consumption and low operating costs
- Flexible solutions for special applications
From small single-shift plants to industrial-scale three-shift operations

Supplemented by proven components from well-known manufacturers

Conveyors, sorting, steel structures, exhaust-air cleaning

High-quality output

THE ENTIRE SYSTEM

Integration of all components

Komptech is a central component vendor for builders and operators of mechanical-biological waste treatment plants. We supply pre- and post-shredders, screens for coarse and fine screening, ballistic separators for recyclable recovery and contrary removal, and turners for composting or drying.

We also develop and supply systems of connected and linked machines, to create entire mechanical treatment plants.

Komptech has the expertise and capacity to fit out mechanical-biological treatment plants with complete system solutions, to turn input material into the desired end products.
The main focus of MBT is the compost-like output. Other outputs are recyclables and refuse derived fuels. Komptech machines are at work around the world, dependably turning out these MBT products.

In the interplay of shredding, screening, composting, recycling, RDF production and post-processing, our machines provide for smooth waste treatment operations.

In terms of flexibility, an MBT plant is far superior to an expensive total waste incineration plant. Mechanical-biological treatment plants have shorter amortisation times, and can be readily reconfigured for new input and output requirements. A smoothly-functioning MBT can provide state of the art waste treatment at relatively low cost, and make good profits for the operator.
TECHNOLOGY FOR A BETTER ENVIRONMENT