

# PROCESSING FOR ANAEROBIC DIGESTION

Treatment of  
biogenic waste

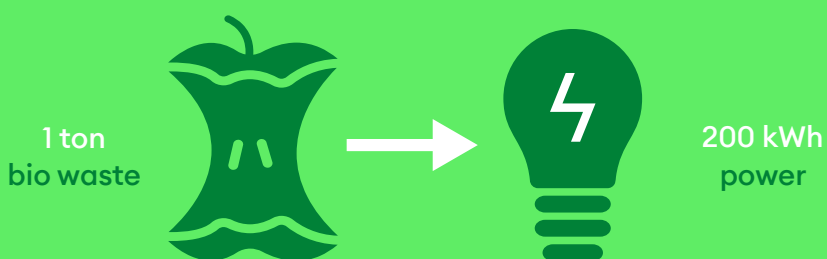




# Things to know about AD (Anaerobic Digestion)

## Energy content

On average, a tonne of biowaste gives 110 cubic metres of biogas. From this, about 200 kWh of electricity can be generated. Around 18 tonnes of biowaste can cover the annual electricity needs of a four-person family.



## AD process

The digestion substrate of wet AD has a high water content (dry matter content ~10-15%). It is continuously mixed during the process. Dry AD is done with stackable organic biomass (dry matter content ~30-40%), which is neither liquefied nor continuously mixed.

# Think green!

Komptech is a leading international technology provider. We plan, build and supply machines and systems for the mechanical and biological treatment of solid waste and biomass, and the processing of woody biomass for use as a renewable fuel.

## Preparation for anaerobic digestion

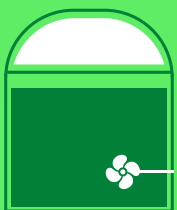
Anaerobic digestion is an economically and ecologically viable treatment method for organic waste with higher moisture. Green energy is produced from the decomposed organic material, and compost and liquid fertilizer from the digestion residue. Proper preparation of the feedstock is the key to efficient operation. Komptech offers a comprehensive range of tried and true machine technology for the process steps of shredding, screening and separating, and dissolving in the case of liquid anaerobic digestion. Our focus is on high gas yield through the removal of contaminants, and on maximizing usable fractions.

## Our services

We provide solid expertise and resources along the entire performance chain for turnkey waste processing facilities, and can assist you from the very first proposal through to detail planning of the entire plant. We'll take care of the implementation too, from installation to operator training to commissioning. After that our Customer Service, which is available nearly around the clock, helps ensure the smooth operation of your facilities. With an eye to the future, we are actively pushing the digitalization of plant technology, from individual machines to complete processing lines.

wet anaerobic digestion

dry anaerobic digestion



## Digestate

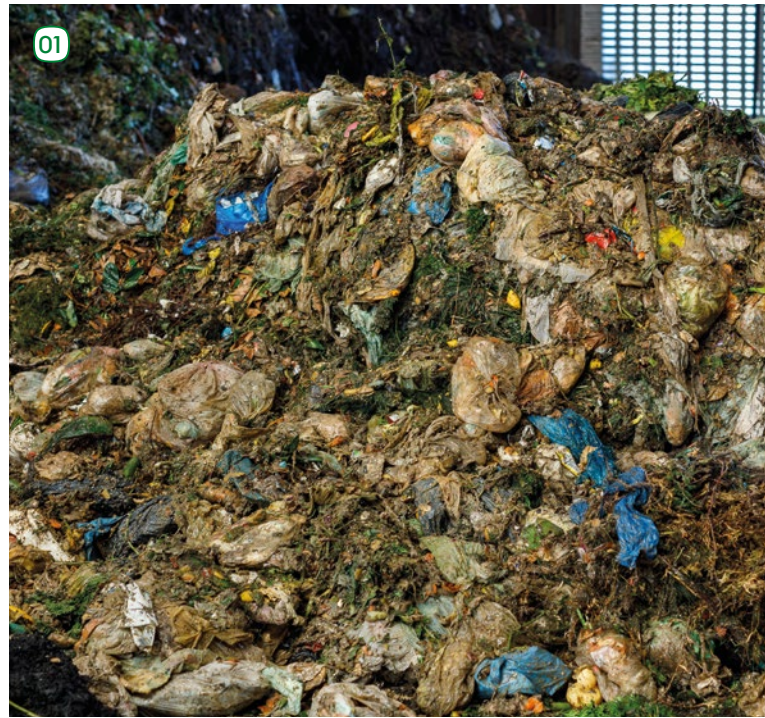
The digestate is used as agricultural fertilizer. The digestate from wet AD („biogas slurry“) is a liquid fertilizer. Dry AD produces a solid digestate that is usually post-composted.



## APPLICATION

# Wide range of applications

Komptech machines can be used to prepare a wide range of material streams for dry or wet anaerobic digestion. For example, our technology gives good results even with feedstocks that have high contaminant content, whether plastics or food packaging.



**01** Separately collected biodegradable household waste (biowaste)

**02** Food scraps and kitchen waste

**03** Expired food from supermarkets and market waste

**04** Food industry waste





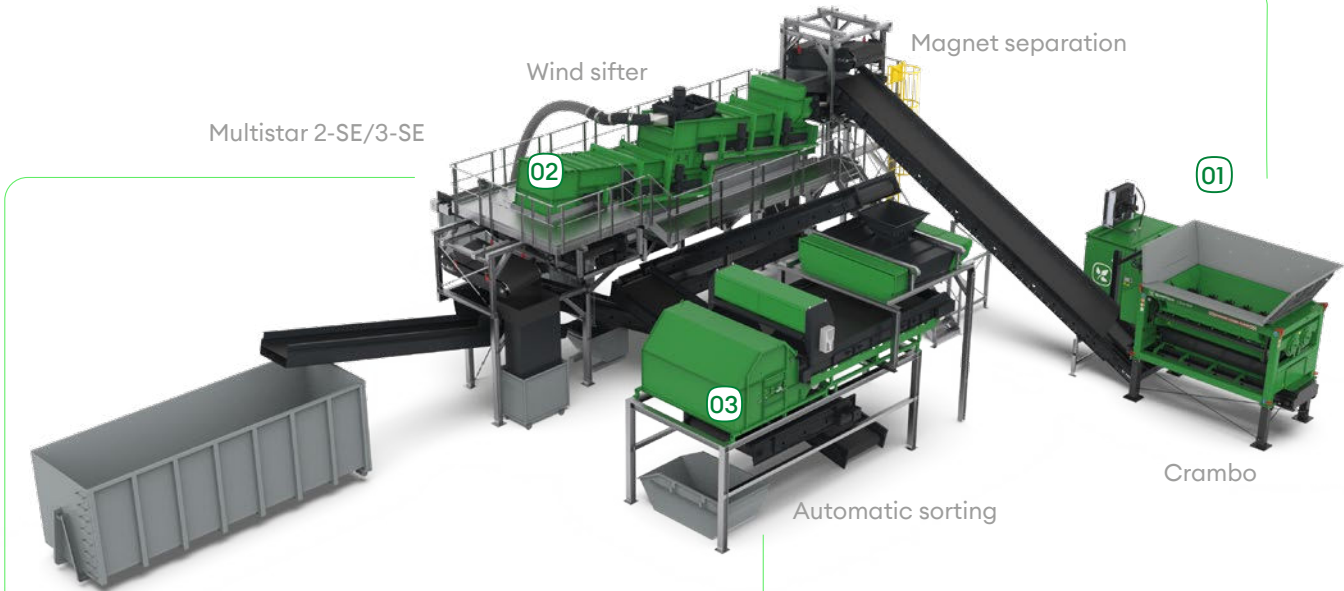
# Preparation for dry anaerobic digestion

Biowaste can be turned into energy and compost, often through a combination of anaerobic digestion and subsequent composting. Processing starts with low-speed shredding, typically followed by magnetic separation and screening by star screen. In screening into two fractions the undersize fraction (mostly <60 to 90 mm) becomes the input material for anaerobic digestion. A large percentage of the contaminants in the organic waste end up in the oversize fraction. Before use this needs to be cleaned or disposed of, depending on local considerations. If the source material is heavily

contaminated with plastics, 3-fraction screening including optical sorting can give good results. Since the fine fraction (usually in the <30 to 40 mm range) is generally less contaminated with plastics, only the medium fraction is sent for automatic sorting. Afterwards, the medium and fine fraction are combined again and fed into the anaerobic digestion process or composting. In this case, the oversized fraction is usually thermally recycled.

## 01 Preshredding

By selecting the right combination of teeth, screen baskets and drum speed, the Crambo dual-shaft shredder can be configured to give exactly the desired shred, opening up all bags and packages as completely as possible while minimizing the shredding of these contaminants. A modular system for setup, material feed, discharge and control offers numerous options for almost any requirement.



## 02 Screening

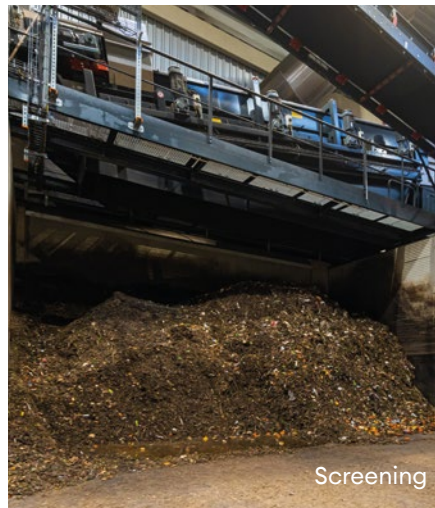
A Multistar star screen downstream of the shredder can be set for exact separation of the shred, by simply adjusting the speed of the star shafts. This allows fast reaction to fluctuations in the properties of the feedstock, for choosing which materials remain in the process and which are removed from it. A wind sifter can be positioned at drop points to boost contaminant removal.

## 03 Separation

The nature of fresh biowaste makes it a challenging feedstock for automatic sorting systems. However, separating it into fine and coarse fractions creates a material stream that is narrowed down in terms of volume and particle size, making sorting easier. Material distributors isolate objects on the conveyor, so specially positioned blow-off bars with compressed air valves can remove a large proportion of the foreign matter detected.



Preshredding



Screening



Separation



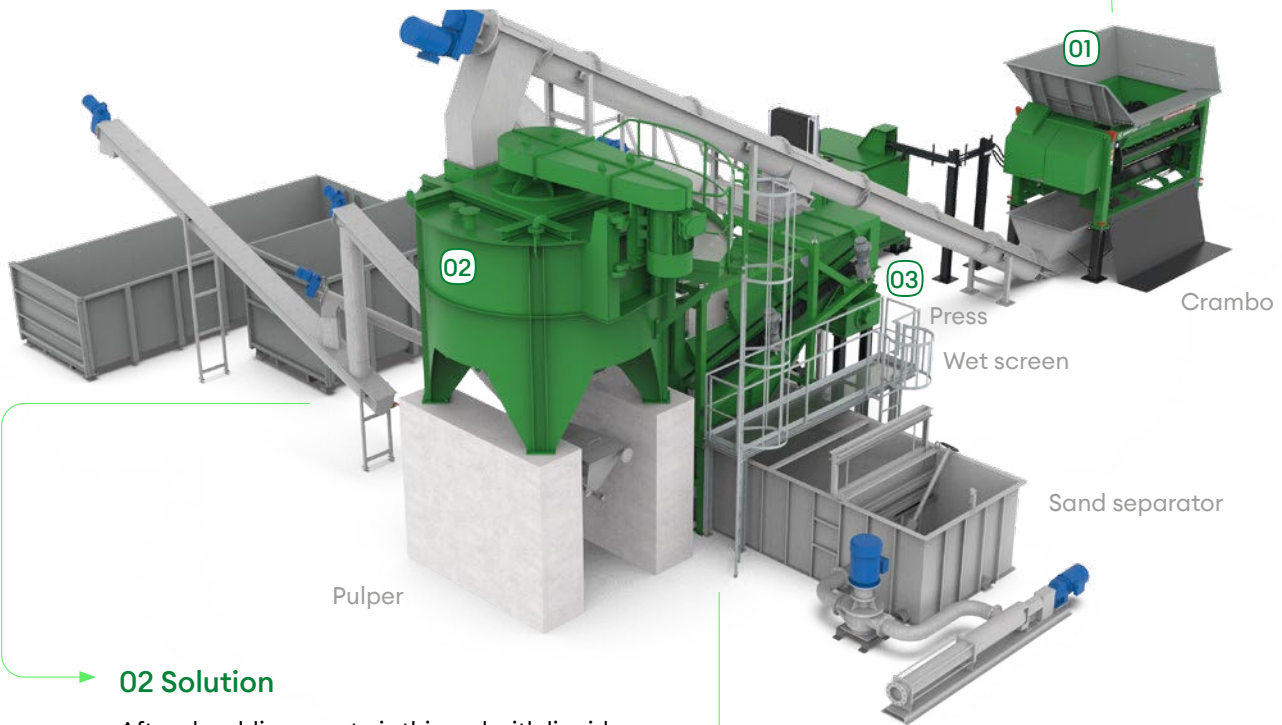
# Technology for wet anaerobic digestion

Wet anaerobic digestion is an effective way to treat wet, heavily contaminated biowaste, food scraps, expired foodstuffs and food industry waste. In three steps, waste is turned into a pumpable digestion substrate. About 90 percent of the starting material goes into the substrate. Low-speed shredding opens up the organic material and prepares it for subsequent liquefaction. The shredded material then passes through a pulper where it is turned into a liquid that can be separated in the subsequent wet screening step. Heavy items are separated out at the same time. Wet screening removes

light contaminants, mostly plastic, from the digestion substrate, while sand separation protects the pumps and paddles of the fermenter from abrasion. The oversize fraction is mechanically dewatered by pressing, and then further processed or disposed of depending on its composition. The interaction of shredding, pulping, screening and separation can be automated to a large degree, and thus supply the digestion plant reliably and with consistent substrate quality.

### 01 Preshredding

A Crambo opens up the waste and shreds it to a maximum size defined by the system, in order to minimize the danger of clogging. It opens packaged items effectively yet gently. In extreme cases the Crambo can also handle full metal and glass containers.

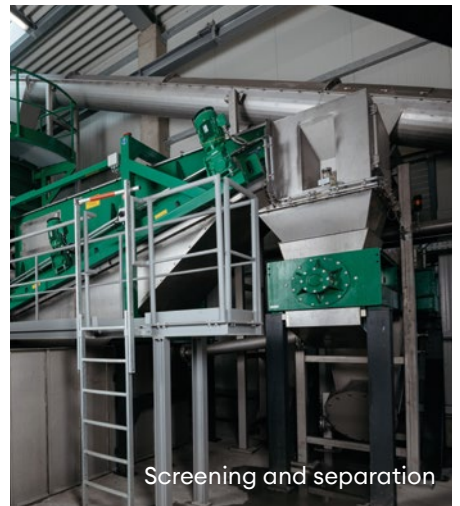


### 02 Solution

After shredding, waste is thinned with liquid in a pulper and mixed at high turbulence in batches. Items that are still packaged are thus separated into content and packaging material. After processing for a period depending on the material, the pulper is emptied. The liquid goes to wet screening, while heavy materials like metal, glass, bone, stones and ceramics are ejected discontinuously by a heavy materials separator.

### 03 Screening and separation

Screening with a Multistar wet screener results in a contaminant-free, pumpable digestion substrate. The oversize fraction, in which the foreign matter is concentrated, is dewatered by a screw press. Digestion substrate that passes through the screen is freed of sand in a settling tank, in order to minimize abrasion and wear in the downstream anaerobic digestion system.





# The Komptech plus



## Top advice

We'll show you how to optimize your processes, based on our experience and extensive data analyses.



## All-in solutions

From individual mobile machines to complex stationary systems, with us you get the right process solution.



## Service near you

Expert technicians are on-site quickly to make sure your machines keep running.



## Productivity in view

Apps and integrated monitoring let you keep an eye on operating data and economy.



## Spare parts always available

Intelligent stocking for the fast, economical provision of high-quality spare parts.



## Need-based service

Our maintenance and service agreements, as well as extended warranties, are aligned with your needs.

# Never waste an opportunity.

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## We create value for you



### **Waste-stream expertise**

Because you need a setup that is tailored to your waste stream.



### **Innovative technology**

Because you need to adapt your output to your market needs.



### **Flexible sales models**

Because you have the choice between new, rental and used machines.



### **Service excellence**

Because you always need to keep your system running.