





ALLRECO. KOMPLETT. DURCHDACHT.

It all started in Niederberg in the "Bergisches Land" region. Hedwig, Werner, and Josef Doppstadt established the "Doppstadt" agricultural contractor company. Today the passion for technical innovations, inventiveness and the perception of market requirements are still the fundamental motive forces for the successful creativeness of the Langenberger Innovation Group (LIG) with the 2nd generation

of shareholders. ALLRECO, with a long Doppstadt history, is directly owned by the LIG since 2021.

Our core business includes machines and plants for the processing and separation of waste wood, MSW, commercial and industrial waste, biomass processing and refuse-derived fuel production. We are a team of highly qualified and experienced employees, and we can

offer our customers tailor-made high-quality machines and completely thought-out plant solutions to meet all requirements.

With a lot of flexibility and inventiveness, we are ready to move great things with you!

At a glance:

- From the composting of biogenic residues, such as biowaste or green waste, a high-quality, natural humus fertilizer is produced as well as a renewable fuel for energy recovery
- Composting distinguishes two applications: Biowaste composting and green waste composting
- Depending on the material composition and the recycling situation, the treatment process can be adapted to the requirements of our customers



BIOWASTE AND GREEN WASTE PROCESSING Natural Recycling to Benefit the Environment

The purpose of composting is the transformation of biogenic waste, such as biowaste or green waste, into a high-quality soil conditioner for agriculture, horticulture, and soil production. One of the by-products is a renewable fuel for energetic use. Today, due to new

legal requirements, the quality demands of the products and thus the demands on composting are increasing.

ALLRECO offers you customized solutions for this, without depriving you of your flexibility for the

changing tasks of the future. The machine combinations used for compost processing can be very different. In general, two applications can be distinguished: Biowaste composting and green waste composting.





BIOWASTE AND GREEN WASTE PROCESSING Description of the Progress

Depending on the application, the material is shredded with a pre-shredder of the CERON series and/or a fine shredder of the AK series. The shredding has an essential influence on the subsequent composting with regard to the degree of defibration, the air void content, the structural material and thus on the throughput time to achieve the necessary degree of rotting.

To use the output fraction for energy recovery, the material can be classified into various size fractions after shredding. In this process, screening is not only used for particle size fractionation, but also for the removal of

impurities. The screened mid fraction can be thermally reused. The fine fraction is fed to the rotting process for aerobic conversion. The screen oversize is transported back to the shredder by means of a recirculation system.

Depending on the utilization situation of the various material streams and the nature of the input material, the shredded product can be stacked up directly into windrows for aerobic conversion before screening. These are treated repeatedly with the DU windrow turner. The aim turning the windrow is to control the water content, aeration, and

thus the rotting process. After a subsequent screening of the windrow material, the oversize can be thermally reused or further processed. More information can be found on the following pages in the section "Compost screen oversize". The fine fraction can be used as a high-quality and natural humus fertilizer.

If the fine fraction still contains impurities, a fine compost treatment can be integrated into the process. This treatment step includes a windsifting unit with an acceleration belt. Impurities such as foils, plastics, or paper are removed from the fine compost and can be utilized energetically.

Material for Green Waste Treatment

- Waste from landscaping
- Wastes from horticulture
- Waste from agriculture



Material for Biowaste Treatment

- Household and garden waste
- Biodegradable animal and plant waste
- Food waste



COMPOSTING One Material, Numerous Applications



0–10 mm
Potting soils

0–15 mm
Used in
horticulture/soil
stabilisation

0–25 mm
Compost for
agriculture

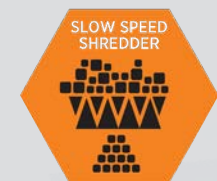
40 mm
Pre-compost

OVERSIZE



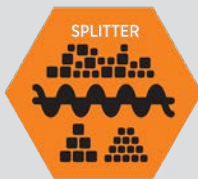
BIOWASTE TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE



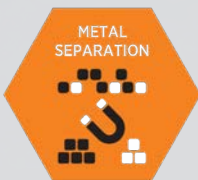
SHREDDING

The shredders of the CERON series can be fed with a conveyor belt as well as with a wheel loader, or grab.



SPIRAL SHAFT SEPARATION

A first screening of the organic fraction is achieved with a spiral shaft separator. This operates without wrapping and ensures reliable discharge even with a high proportion of impurities, such as foils or nets.



MAGNET

Separation of ferrous metals e.g., fine or coarse ferrous scrap, by means of an over belt magnet or magnetic head drum.



MATERIAL INFEED

The material feed can be customized due to the wide range of hopper variants.



HAND SORTING

The coarse fraction from the splitter can either be returned to the shredder by a reversible conveyor belt or further separated in a hand sorting system.



WINDSIFTING

With our windsifters, separation into up to three fractions is possible. The heavy material is discharged against the air flow. The organic mid fraction is lifted by a kink belt so that light fractions such as foils can be extracted from the material flow.

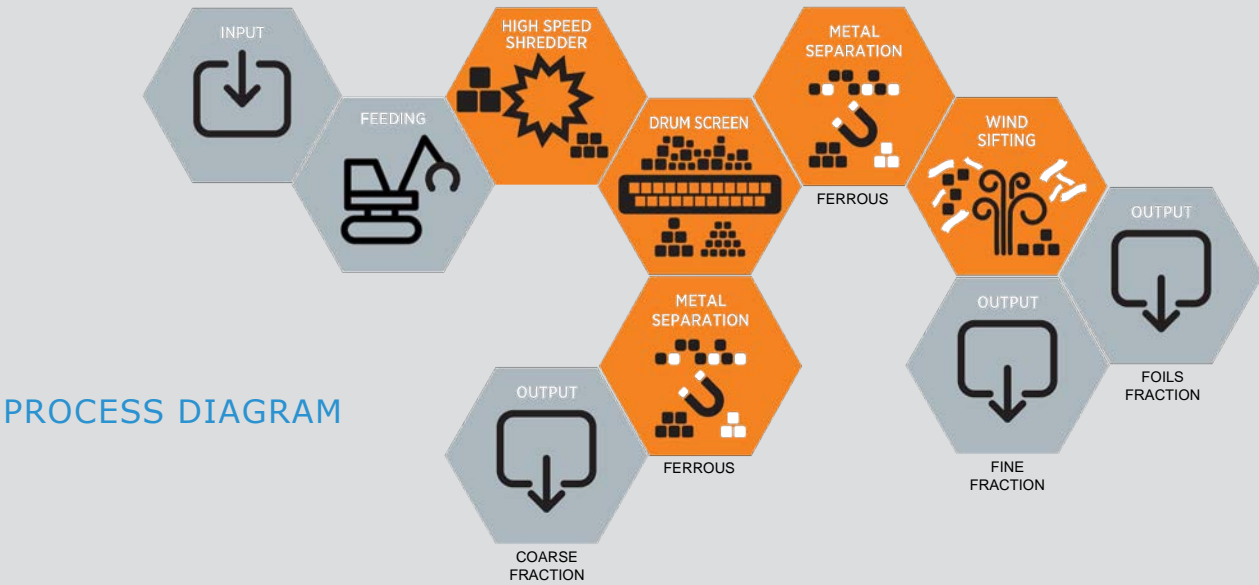
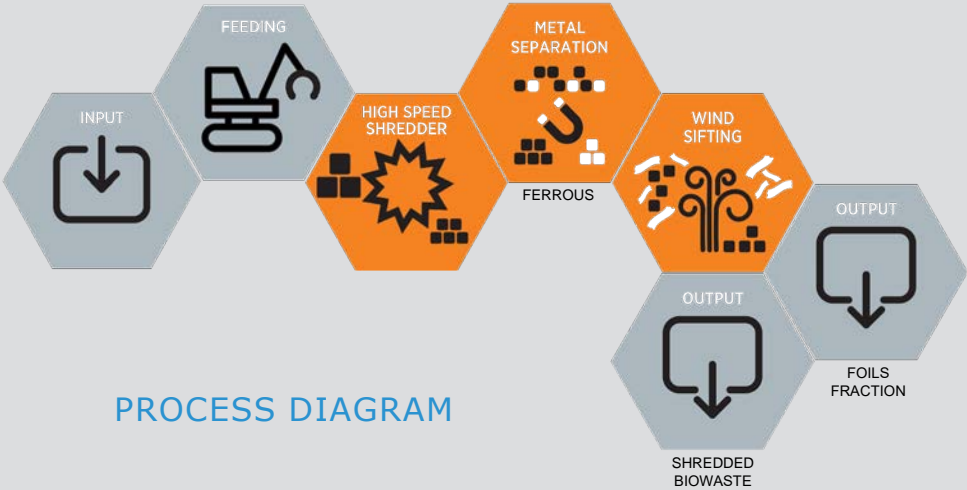


PROCESS DIAGRAM

BIOWASTE TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE

Depending on the contamination level of the biowaste as well as the waste source and the desired output quality, the biowaste treatment can also be designed in a simpler way. Both biowaste and already pre-treated biowaste can be used as an input material.



GREEN WASTE TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE



SCREENING

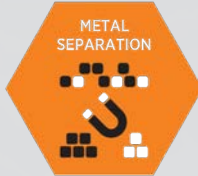
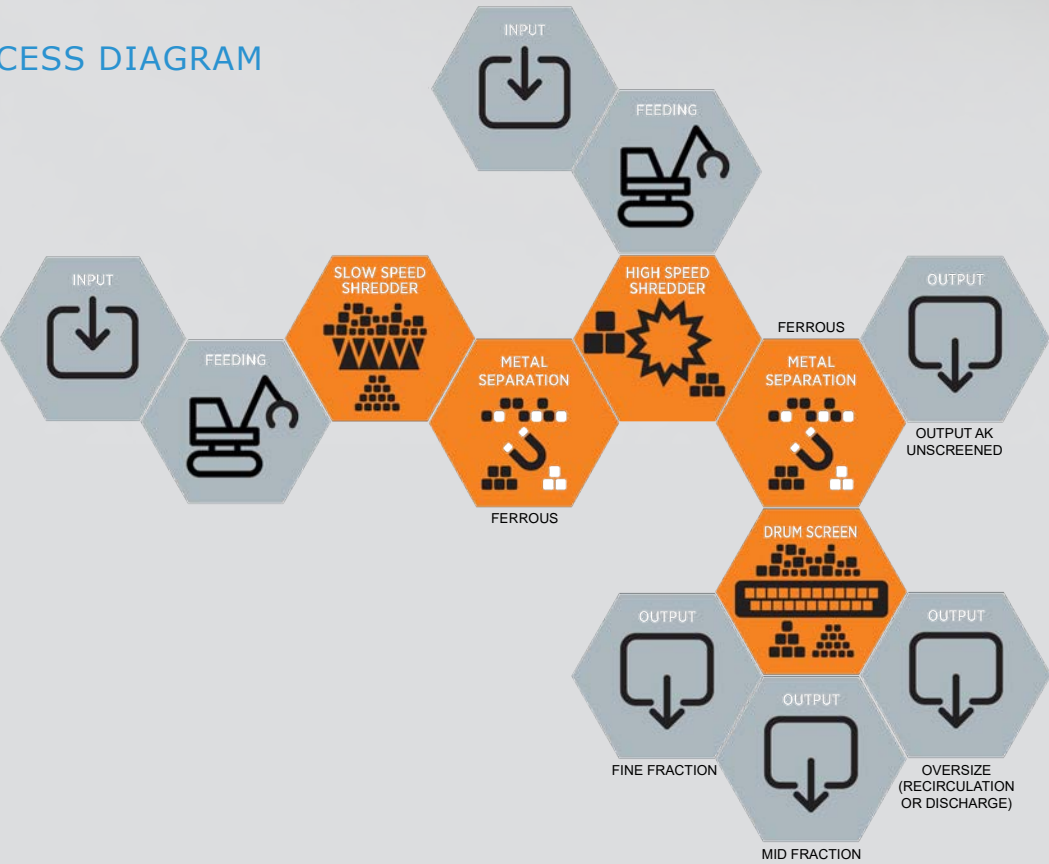
The screening is implemented with a drum screening machine, which enables screening into various fractions. The oversize is conveyed back to the shredder or discharged via a reversible conveyor belt.



PRE-SHREDDING

Heavy input materials such as roots or branches are easily pre-shredded with the CERON.

PROCESS DIAGRAM



MAGNET

Separation of ferrous metals e.g., fine or coarse ferrous scrap, by means of an over belt magnet or magnetic head drum.



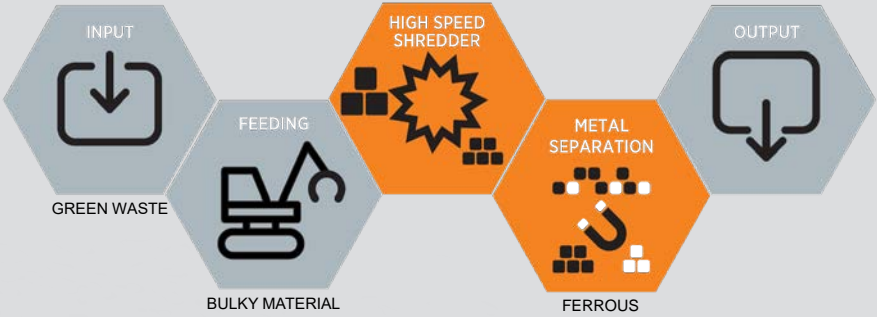
FINE SHREDDING

A high-speed shredder from our AK series is designed for shredding the material to the required final grain size. The machine can be loaded with a conveyor belt as well as with a wheel loader or grab.

GREEN WASTE TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE

PROCESS DIAGRAM PRE-SHREDDING



FINE SHREDDING

Due to the wide feeding area, larger quantities of material can be loaded, and longer feeding intervals can be realized.



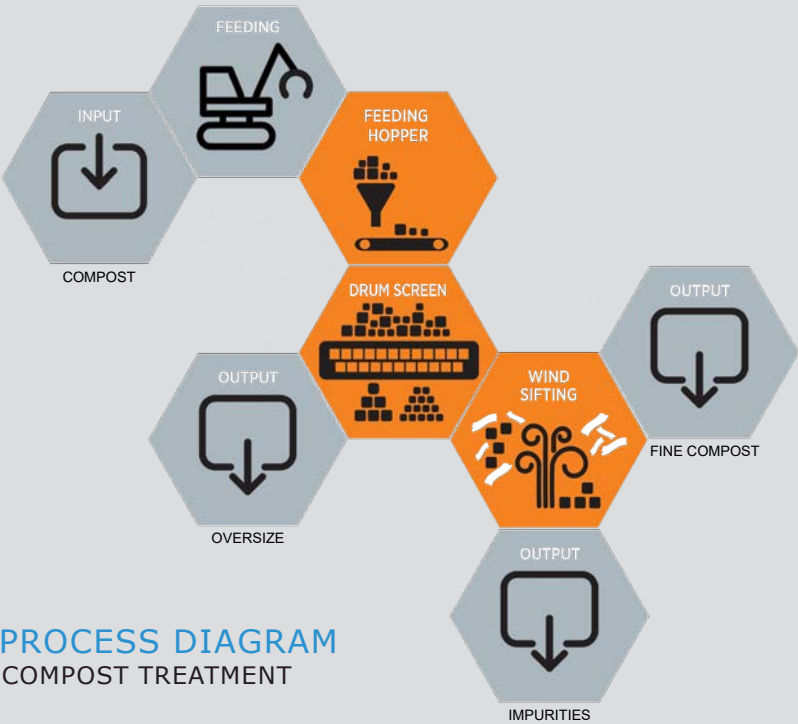
MAGNET

Separation of ferrous metals e.g., fine or coarse ferrous scrap, by means of an over belt magnet or magnetic head drum.



TURNING

The DU windrow turner is independent of the windrow shape and suitable for trapezoidal and flat top windrows of any width up to 3.5 m of height.



PROCESS DIAGRAM COMPOST TREATMENT



SCREENING

The drum screen classifies the material into several fractions. The screen oversize can also be further processed.



WINDSIFTING

The material is lifted by a kink belt to enable extraction of light fractions such as foils from the material stream. The cleaned compost remains on the belt. Depending on the material and the application, the foil fraction can be separated from the adhering fine compost in a light fraction separator.



MATERIAL INFEED

A uniform feeding of the plant with raw compost can be carried out by means of a feeding hopper.





COMPOST SCREEN OVERSIZE TREATMENT

Process Description

After composting, the fine compost is screened out of the material stream. More information on this can be found on the previous pages in the section "Biowaste and green waste composting". High-value material fractions can be generated from the remaining compost screen oversize via further treatment steps.

The process can include screening, windsifting, and float-sink separation. Depending on

the nature of the material, process water treatment can be integrated into the process if necessary.

After screening the compost, the screen oversize is taken to the windsifter, where the foil fraction is separated. This fraction can be utilized for energy generation as a high calorific fraction. The heavy fraction of the windsifting process is separated again by a float-sink separation in the form of the HDS-S. Floatable materials

such as wood are returned to composting as structural material or are utilized for energetic recovery in a biomass power plant. The heavy fraction can be used as backfill material or can be further processed.



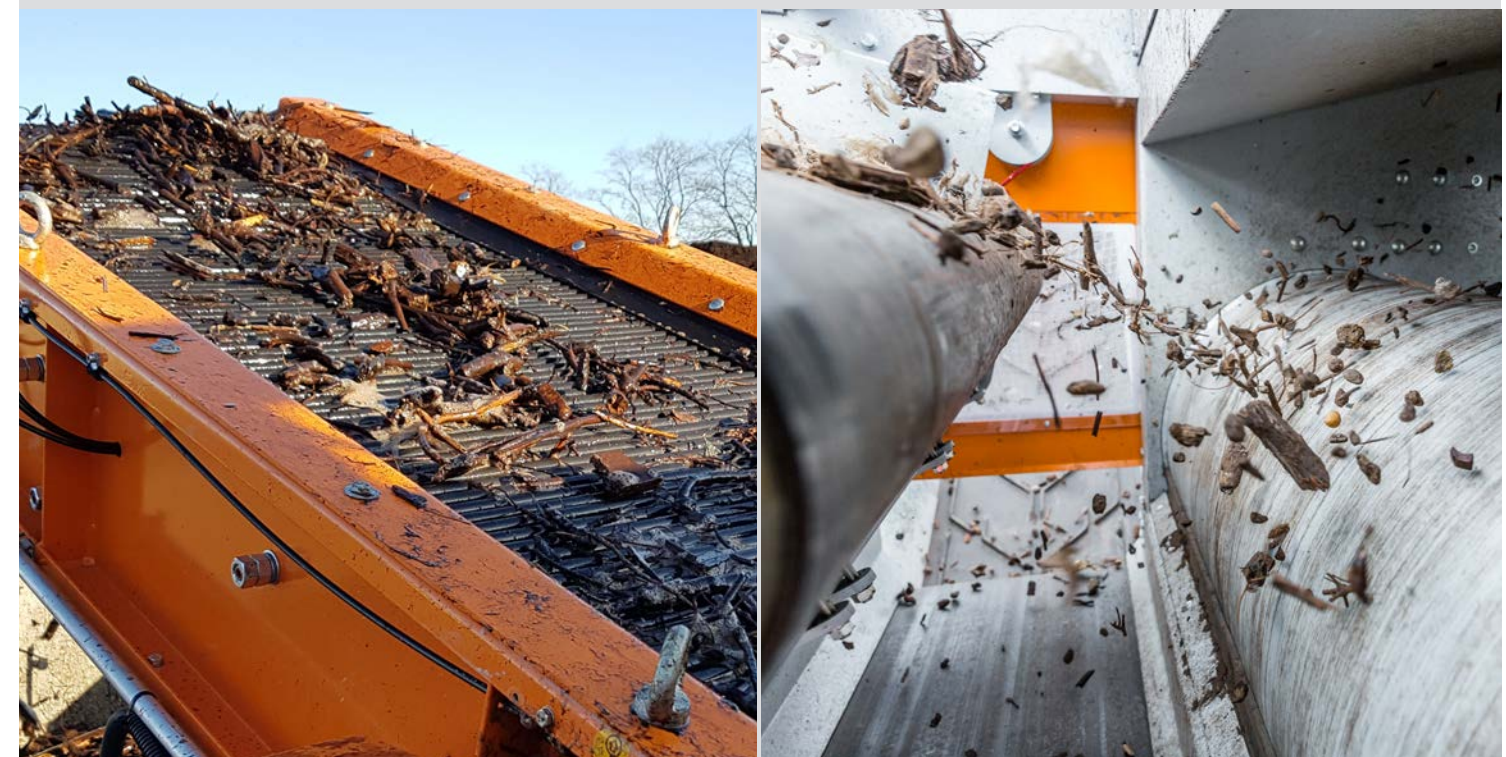
COMPOST SCREEN OVERSIZE



In most cases, the compost screen oversize must be thermally discarded at high cost. These costs can be reduced by processing. The results are the following useful fractions:

REFUSE-DERIVED FUELS WITH HIGH CALORIFIC VALUE (plastic foils, see picture top left)
RENEWABLE MID CALORIFIC REFUSE-DERIVED FUELS (biomass, see picture top centre)
COMPOST STRUCTURAL MATERIALS (see picture top centre)
INERT STONE FRACTIONS (see picture top right)

Furthermore, sand and compost adhesions are greatly reduced on all above-mentioned fractions.



HOW COMPOST SCREEN OVERSIZE TREATMENT WORKS

COMPOST SCREEN OVERSIZE

TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE



SCREENING

The finished compost is obtained as a fine fraction in the screening process. In addition, both dust in the windsifter as well as sludge formation in the HDS-S are greatly reduced.



FLOAT-SINK SEPARATION

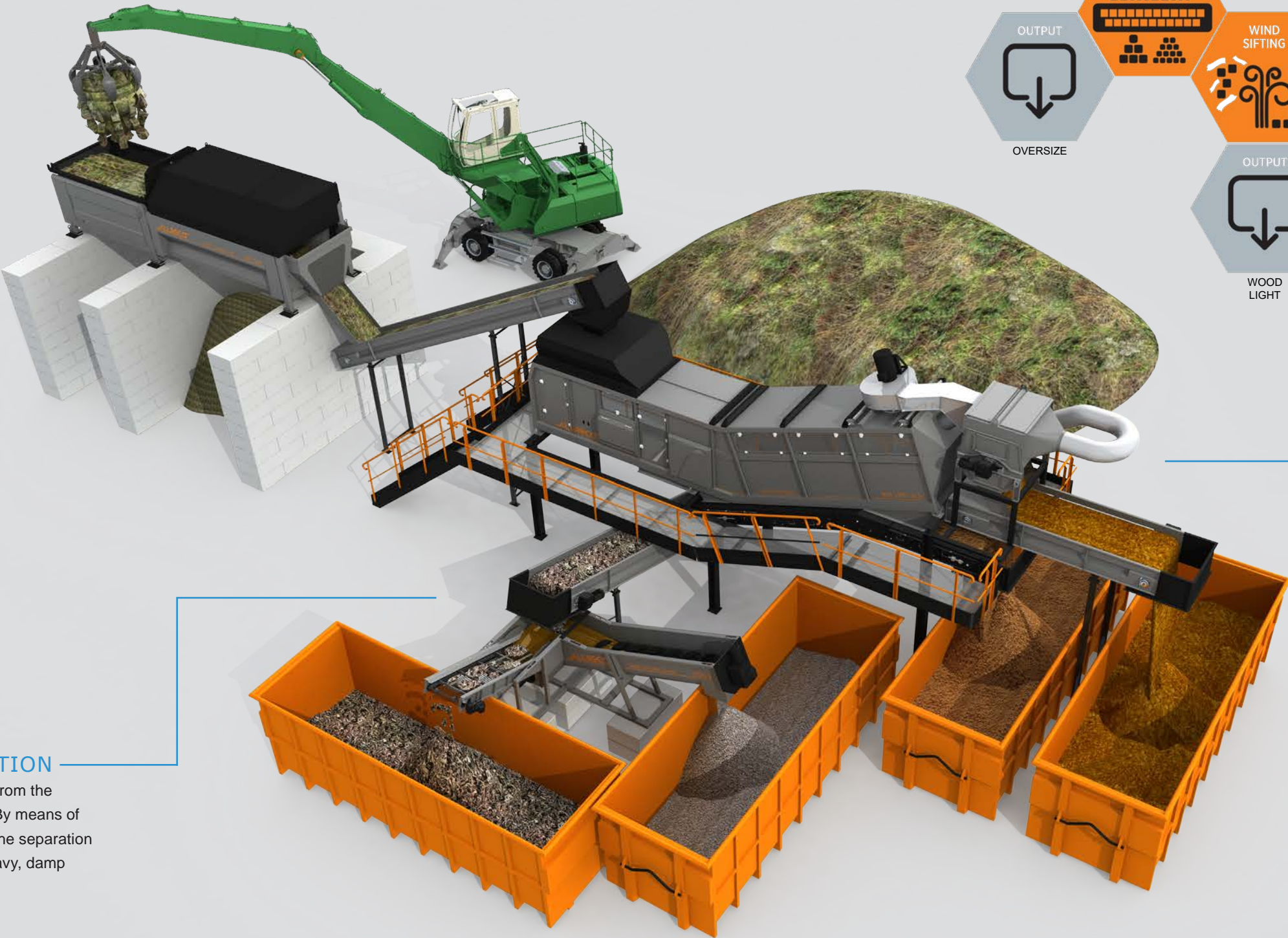
The HDS-S separates the wood from the stones according to the density. By means of adjustable cross-current speed, the separation cut can be varied so that also heavy, damp wood floats up.

PROCESS DIAGRAM



WINDISFTING

The plastic foils are removed from the heavy fraction and transported to a container or to a discharge conveyor. The side conveyor transports the heavy fraction to the float-sink separation in the HDS-S.





KITCHEN AND FOOD WASTE TREATMENT

Process Description for the Treatment of Organic Residues

Source separated organics separately collected biowaste. This can be separated into solid and liquid phase with the ALLRECO screw press, just like catering waste, overlaid foodstuff, and shop returns.

In the liquid phase, the bioavailable components are enriched and can be fed to a wet fermenter. Due to the gentle disintegration and pressing, the fermentation residue usually does not require any further processing. The feedstock already contains less than 0.5% of contamination based on dry matter prior to the fermenter. The solid phase

consists mainly of packaging material and other solids. The residual organic matter within the solid phase is converted into heat during subsequent composting or biological drying respectively. After screening, the coarse fraction consists of clean and dry packaging and can get incinerated. The fine fraction is clean compost.

In case of a dry fermenter, the screw press after the fermenter can make the fermentation residue stackable and thus storable by removing a pumpable liquid phase. Furthermore, the necessary air permeability for subsequent composting is ensured.

The ALLRECO mixer can mix the solid digestate fraction from the press with green waste before it goes into the windrow. This ensures a more intensive composting and better rotting degree.

For processing trapezoidal and flat top windrows up to 3.5m in height, the side turner DU is a cost-effective and robust solution. The raw compost can be classified using a ALLRECO screening machine, which provides the finished compost.



SOLID-LIQUID SEPARATION OF BIOWASTE

The ALLRECO screw press can be used both as a pre-treatment step for source separated organics (SSO) prior to a wet fermenter as well as a post-treatment step for digestate after the dry fermentation of mixed green waste and SSO. Equipped with the feeding hopper,

the machine homogenizes and opens up bags and containers prior to separation into a solid and a liquid fraction.

The focus of the separation is not to gain as much liquid as possible from the feed material, but to provide a liquid, as clean

as possible with just one machine without pre-treatment and no further after-treatment required.

The fractions in case of a SSO pre-treatment with the DSP prior to wet fermentation are:

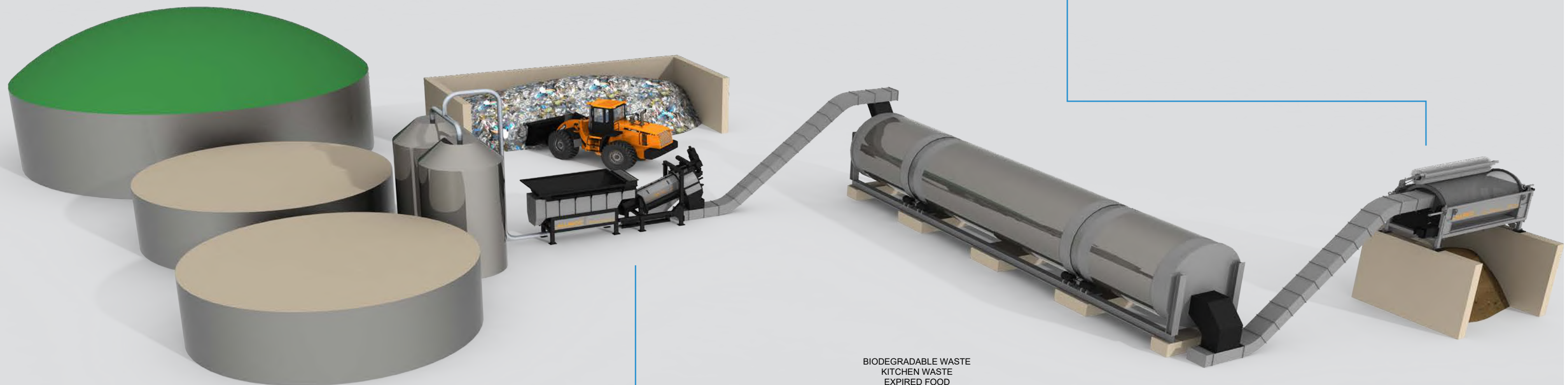
INPUT KITCHEN WASTE (see picture above left)

LIQUID SUBSTRATE FOR BIOGAS PRODUCTION (see picture above centre)

SOLID FRACTION WITH PACKAGING WASTE (see picture above right)

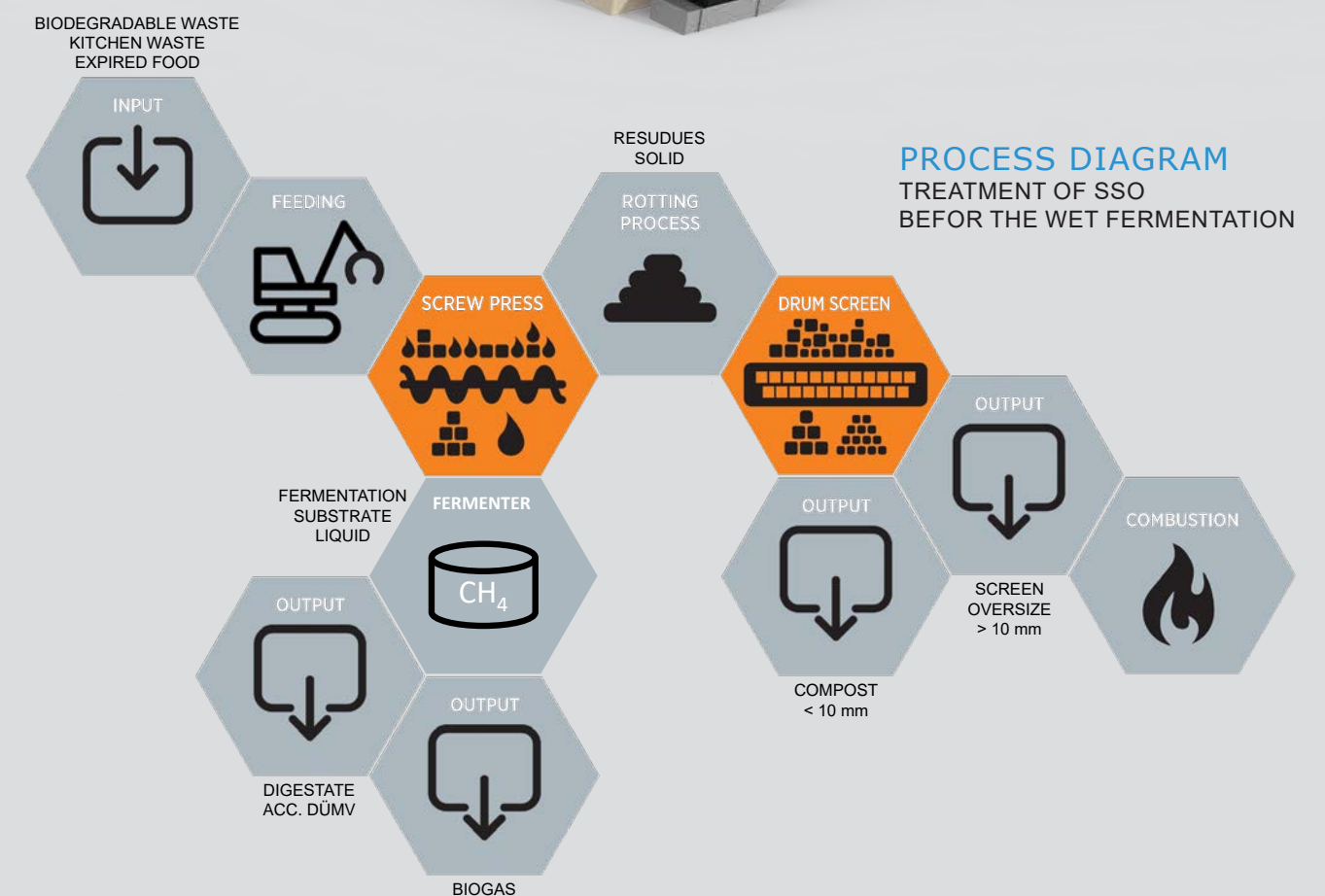


EXEMPLARY PROCEDURES AT A GLANCE



SCREW PRESS

The screw press fulfils the function of a solid-liquid separation. In the liquid phase, the bioavailable portion for biogas production is enriched. Packaging material, such as plastic, wood or metal accumulate in the solid fraction.



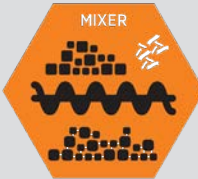
SOURCE SEPARATED ORGANICS KITCHEN AND FOOD WASTE TREATMENT

EXEMPLARY PROCEDURES AT A GLANCE



SCREW PRESS

The solid-liquid separation of the fermentation residue after the dry fermenter (tunnel or box fermenter) ensures that it can be stored in a more space-saving manner and is better aerated in a subsequent rotting process, reducing the duration due to less water to be evaporated.



MIXING

The solid fraction of digestate can be mixed with shredded green waste and, if necessary, other additives prior to composting to optimize aeration and pH value.



MATERIAL INFEED

A uniform feeding of the plant with the raw compost can be achieved by a feeding hopper.

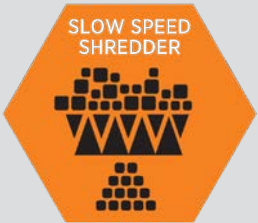
PROCESS DIAGRAM PROCESSING OF DIGESTATE AFTER THE DRY FERMENTER



SCREENING

After aerob digestion the raw compost is screened. The result is fine finished compost and coarse screen oversize, which can be recycled as structural material back to the windrow or, used as fuel in a biomass powerplant.

MACHINE OVERVIEW



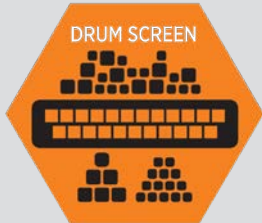
PRE-SHREDDING

SLOW SPEED SHREDDER LINE
CERON - SERIES



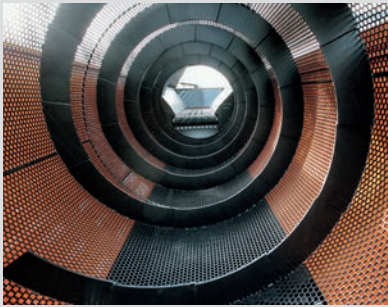
FINE SHREDDING

HIGH SPEED SHREDDER LINE
AK - SERIES



SCREENING

TROMMEL LINE
SM/SST - SERIES



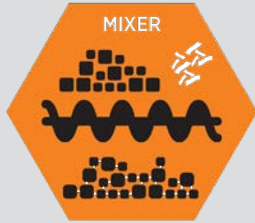
SIFTING

WINDSIFTER LINE
WS - SERIES



SOLID-LIQUID
SEPARATION

PRESS EXTRUDER LINE
DSP 205



MIXING

MIXER LINE
DM 215 E



- Powerful and impurity resistant
- Maximum throughput for difficult shredding tasks
- Highly efficient, speed adjustable drive
- Robust, solid steel construction
- Coarse shredding (prevention of fines)
- User-friendly access and minimal maintenance
- Low operating costs
- Low dust and noise emission
- Automatic detection of contaminants and discharge
- Quick-change system for wear parts

- Homogeneous output material
- Swinging flails resistant against impurities
- Exposed impurities
- Adjustable throughput
- Quick change basket system variable output grain size
- Fully automatic, load-dependent material feeding by a scraper floor and a feed-in drum
- Different flail types available
- Feeding with conveyor belt and/or by wheel loader / grab

- Simple and robust technology
- Flexible results through tailored drums (punched plate, mesh wire, changeable plates)
- Quick drum change
- Maximum throughput
- Almost maintenance-free
- Multiple screen sections possible
- Proven over a thousand times

- Separation in up to three fractions (heavy, light, superlight fraction)
- Trouble free use
- Option disc spreader: Even material distribution over entire sifter width

- No pre-shredding or pre-screening required
- Clean separation of biogenic waste into liquid and solids
- Low plastic contamination in the filtrate
- Insensitive to foreign bodies of approx. Ø 80mm

- Solid housing and powerful drive
- Homogenizes the heaviest feed materials
- Three robust mixing screws, interchangeable mixing paddles
- Continuous or batch operation possible
- Large adjustable knife gate valve vor discharge

We would also be pleased to provide you alternative procedures and techniques. Please contact us!



The advantages of recycling with ALLRECO thought-out solutions

- The perfect solution for every application
- Low treatment costs per ton
- Maximum throughput
- Innovative concepts with crushing, screening, and separation for optimal output quality
- Simple handling
- Low proportion of fine grain
- ALLRECO service and quality included



Rev. 01 - 11.2022

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