



TYRANNOSAURUS 1200A series FineShredders

Sales Training

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Renewable future together.

16/2/24

Instructions for training

TYRANNOSAURUS® 1200A FINESHREDDER

- Please keep your microphone muted
- Please save your questions for the end of the training
- This training will be recorded
- The recording and the slides will be made available to you afterwards

BMH's key business segments for growth

1. Life cycle services



Why?

Our own large installed base provides opportunities for stable and less volatile business.

2. Shredding equipment



Why?

Shredding equipment is a large existing market in which our market share is low. Our shredders fit well into certain market segments. Equipment sales also support LCS growth.

3. Waste to Chemicals



Why?

Chemical recycling is a new early phase emerging market. This segment supports our target to expand offering outside power plants. Our competitive advantages fit to this market

4. Waste refining and biomass fuel handling



Why?

Market growth of our traditional business is expected to be on a low level. We want to keep our high market share to secure good base load volume and LCS opportunities.

Target customer groups - Shredders

Power Plants



CFB and advanced
Grate boiler power
plant owners

Cement Industry



Existing cement
plants increasing
renewable portion in
combustion

SRF Producers, Landfill Mining



SRF producers bring
the shredder to
smaller sites and
landfills for pre-
shredding

Plastic Recycling



Shredding of
recycled plastic for
further processing

Forest Industry

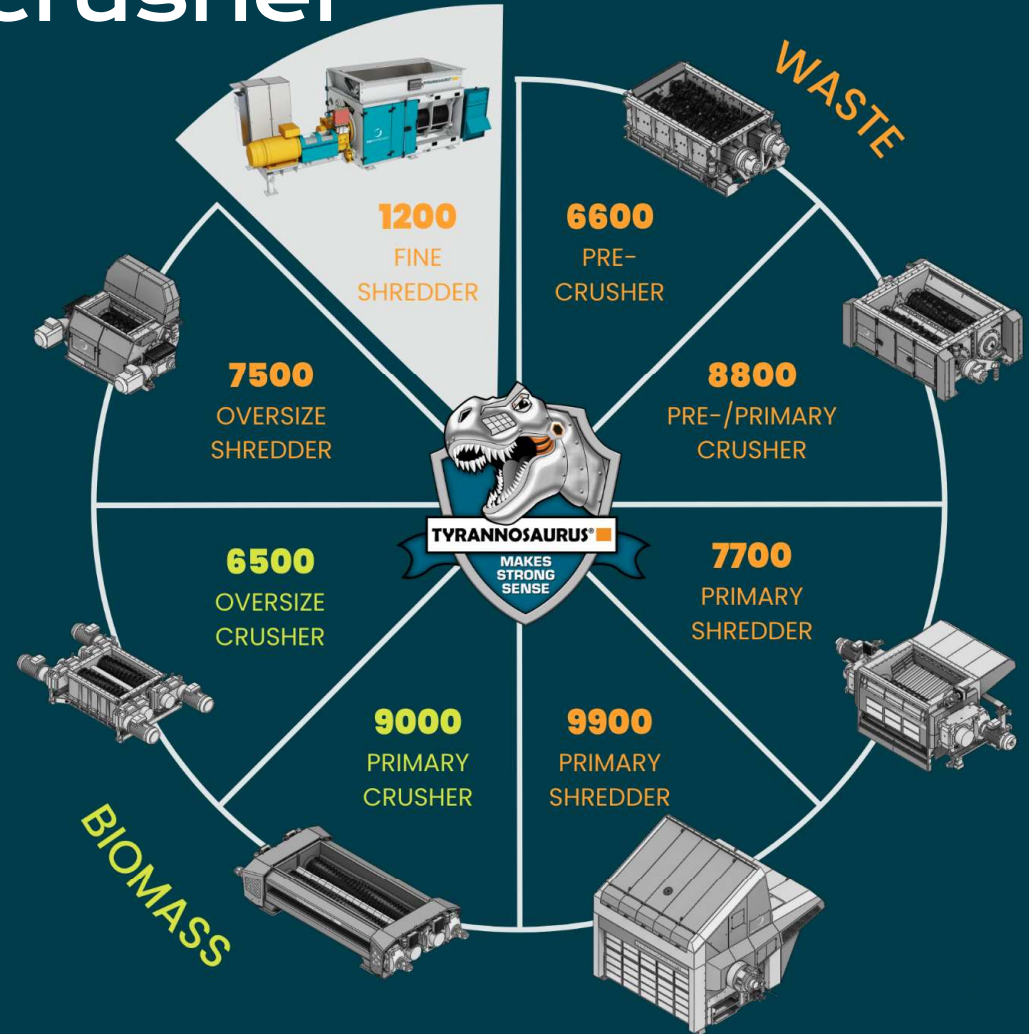


Old biomass
handling lines
require new
advanced oversize
crusher

Strategic initiatives 2024-27 - Shredders

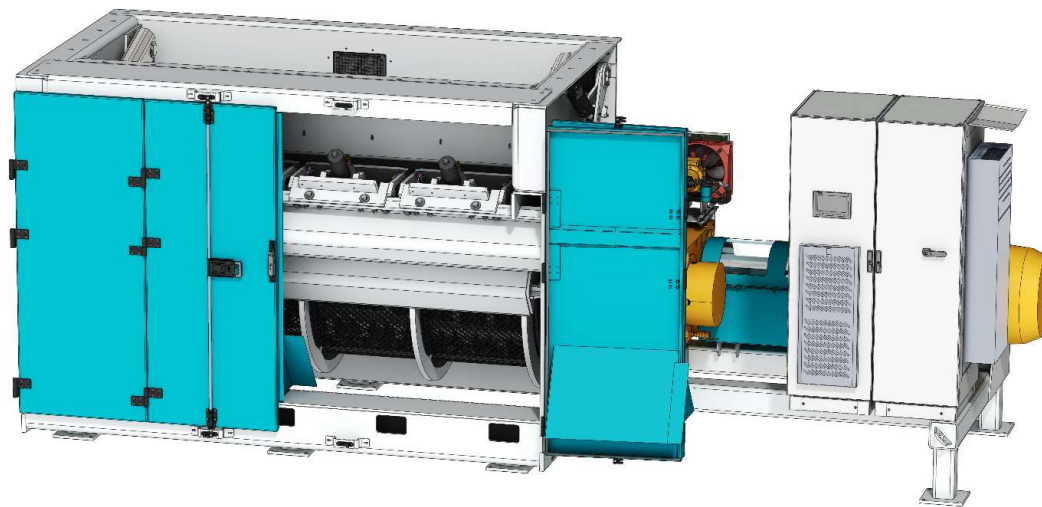
1. Create organization and processes to execute shredding equipment sales and deliveries
2. Differentiation through R&D for selected shredder models and customer segments
3. Increase knowledge of the market and strengthen local sales and aftersales capability with partners
4. Create cooperation model with LCS team to offer shredders, parts and services as one package to customers
5. Develop manufacturing and subcontracting networks to increase competitiveness in selected markets

BMH shredder and crusher product range



The TYRANNOSAURUS® 1200A FineShredder Series – General

- THE TYRANNOSAURUS® 1200A FINESHREDDER SERIES consist of electrically driven, high-speed, single-rotor shredders.
- They are specifically designed for industrial scale refining of pre-shredded and sorted solid waste that typically needs to be typically to 20–70 mm particle size for the purpose of increasing fuel combustibility or optimizing the particle size for further processing.



Applications, Feed materials

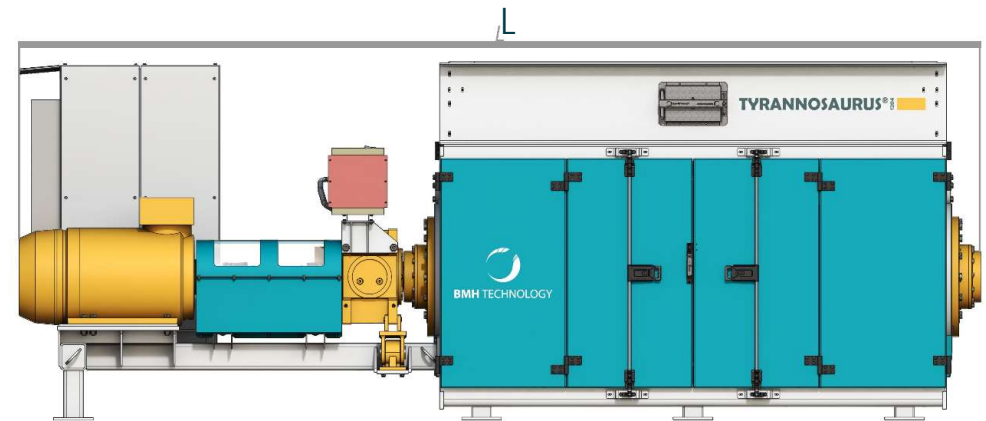
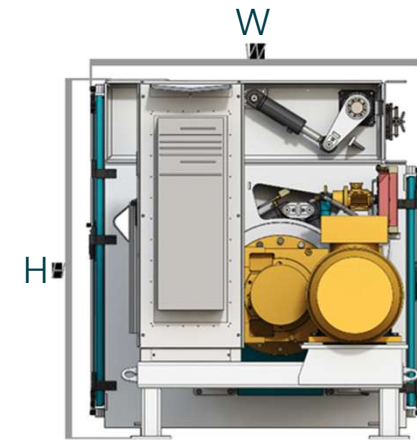
- Refining of pre-shredded and sorted solid waste, which usually consists of plastics, cardboard, wood and textiles.
- Ideal for producing the finest particle size when there is a need to increase fuel combustibility or optimize the particle size for further processing.
- Typically, 1200A series shredders process different waste streams into alternative fuels:
 - Alternative fuel for cement kilns and RDF based fluidized bed boiler (FBB) power plants
 - Feedstock for RDF pellets production
 - Feedstock for chemical production



Technical data, Dimensions

TYRANNOSAURUS® 1204A FINESHREDDER

- Main dimensions (L x W x H): 7200 x 2600 x 3000 mm
- Weight: 29600 kg
- Drive system: Electric
- Drive Power: 350 kW
- Number of rotors: 1 pc
- Rotor length: 3200 mm
- Rotor Diameter: 1200 mm
- Rotor knives: 312 pcs
- Counter knife cassettes: 4 pcs
- Screens: 12 pcs
- Auxiliary HPU: 16 kW



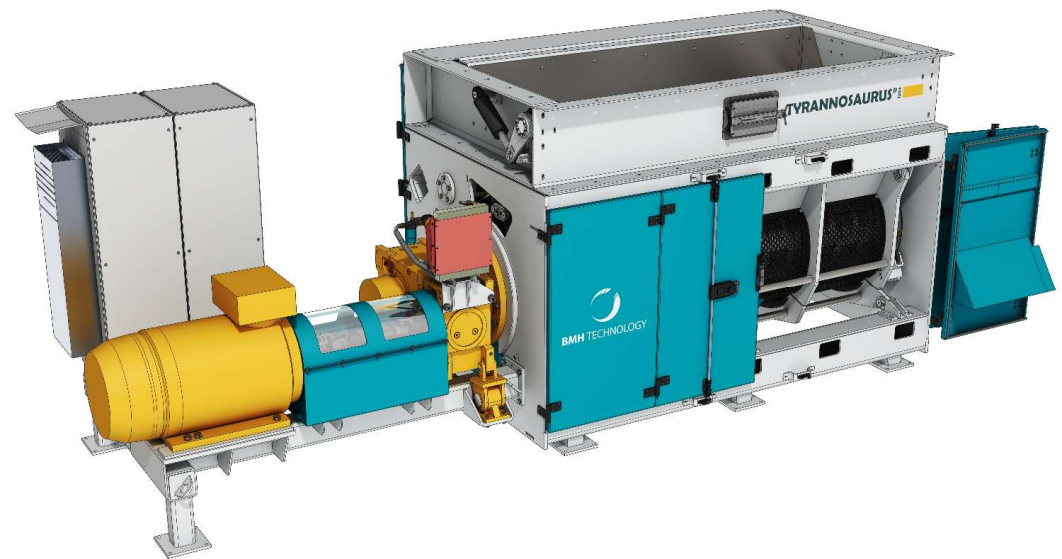
Capacity range

- Capacity is highly dependant on processed material's properties and quality such as particle size, density and moisture.
- Typical material range inside red box.



What is new?

- **Higher processing efficiency:** New shredder has more than 50% bigger screening area compared to old model.
- **Better maintenance:** With larger maintenance doors on both side (More design for the door), the hydraulic operated screen meshes are easier to maintain and cassettes can be removed easier.
- **Simpler construction:** More compact design in frame and closer automation cabinet.
- **More efficient engine** with ABB Synchronous motor and Nord gear box transmission



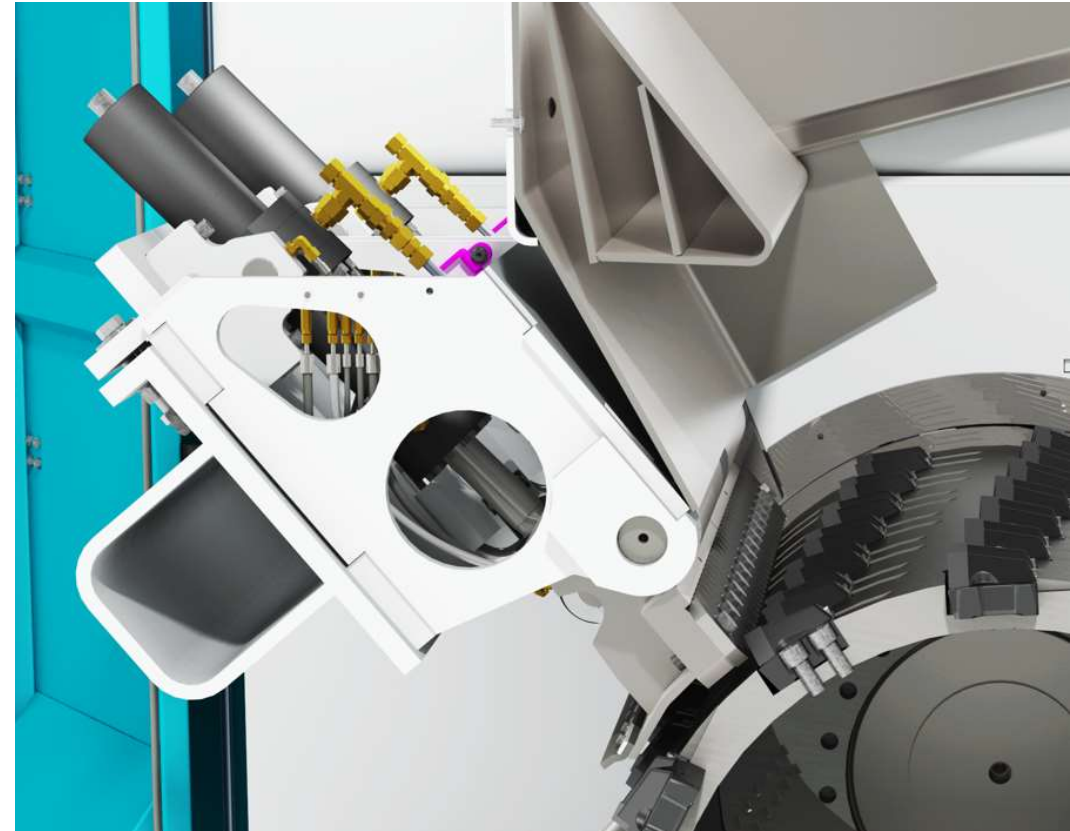
Zero Gap® cutting technology

- The patented Zero Gap® cutting technology ensures that the capacity, particle size and quality are preserved even when the knives start to wear.
- Each 800 mm section of the counter knives can be adjusted independently to maintain the cutting gap in minimum, ensuring optimal cutting even for the thinnest of waste materials.



Impact Protection™

- The Impact Protection™ (IP™) function is based on the counter-knives that are hydraulically held in position.
- This allows for an easy and fast removal of unshreddable materials and effectively prevents damages to the shredder.
- The Impact Protection™ both reduces the need for process stops and shortens the actual stops.



Large screening area

- EFFECTIVE SCREENING is the key to achieving high processing efficiency.
- The screening area is over 50% bigger than in the previous model.
- This enables easier access for the shredded material to pass through the screen and reduces the heat generated in the process.



Integrated control cabinet

- New generation FineShredders come always with a productized, stand-alone control system.
- Control system & cabinet include everything that the shredder needs to operate.
- Control cabinet can be placed to field into an integral part of the shredder, when all internal cabling can be done and tested before delivery to customer, but also placement away from the shredder is possible (e.g. to electrical room).

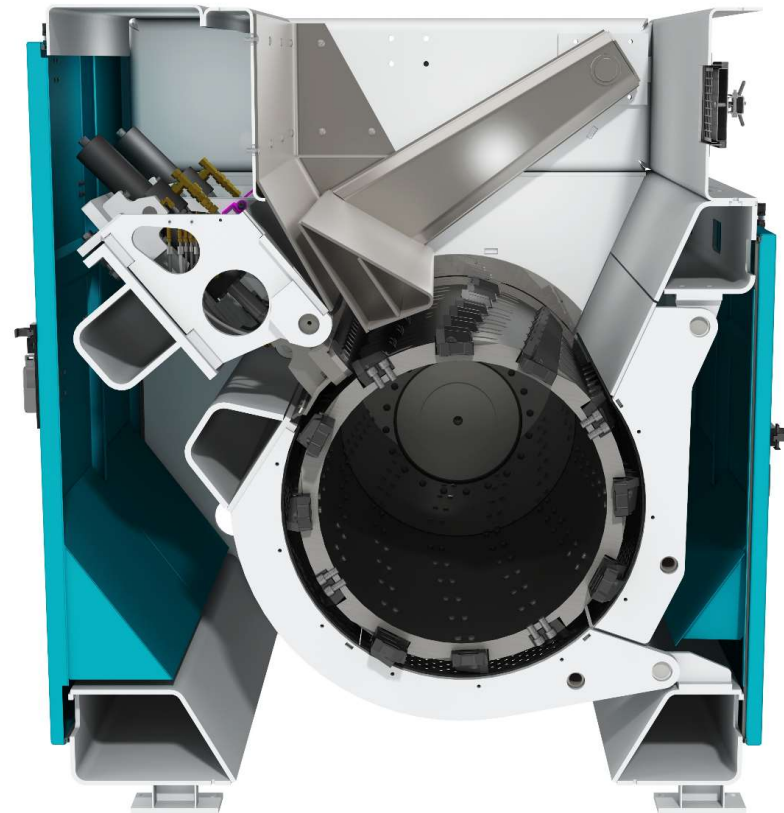
Advantages

- Better quality and repeatability
- Zero design needed and lower cost overall
- Shorter delivery time
- Easier installation and commissioning



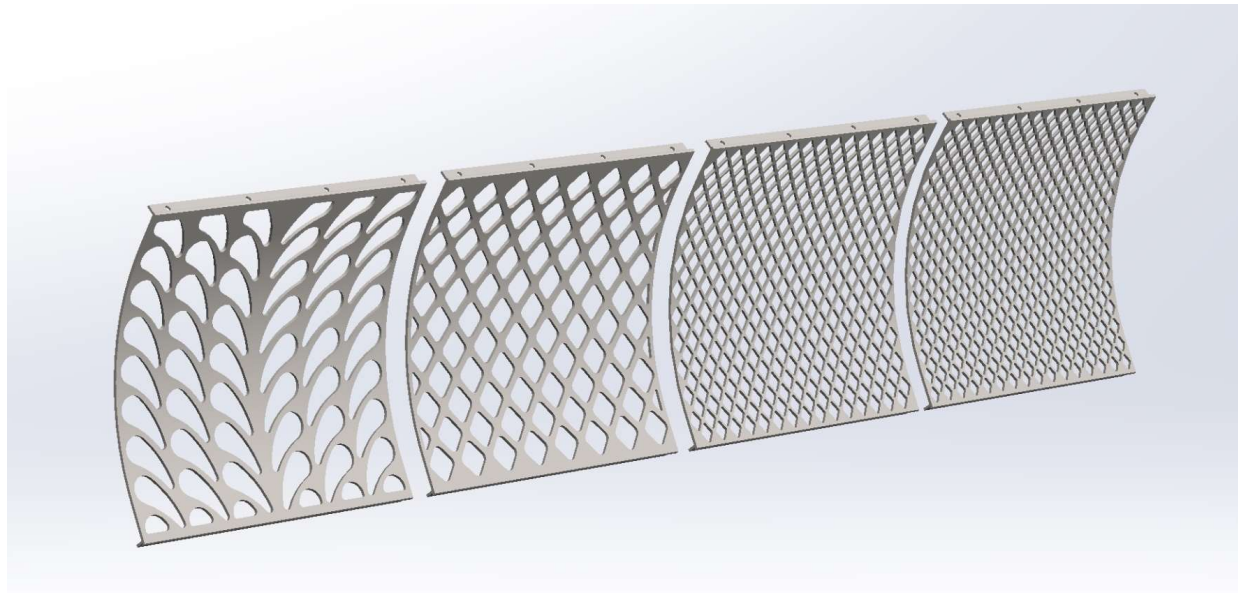
Optional equipment: Pusher

- The hydraulically operated pusher efficiently presses the waste against the rotor knives.
- This keeps up continuous high shredding performance and enables processing lighter input materials.
- For very light and fluffy feed materials, the pusher can be extended.



Optional equipment: Screens

- A wide range of available screens secures the shredder's adaptability to various applications.
- The carefully selected aperture size and shape also improve the shredder's capacity in each application.

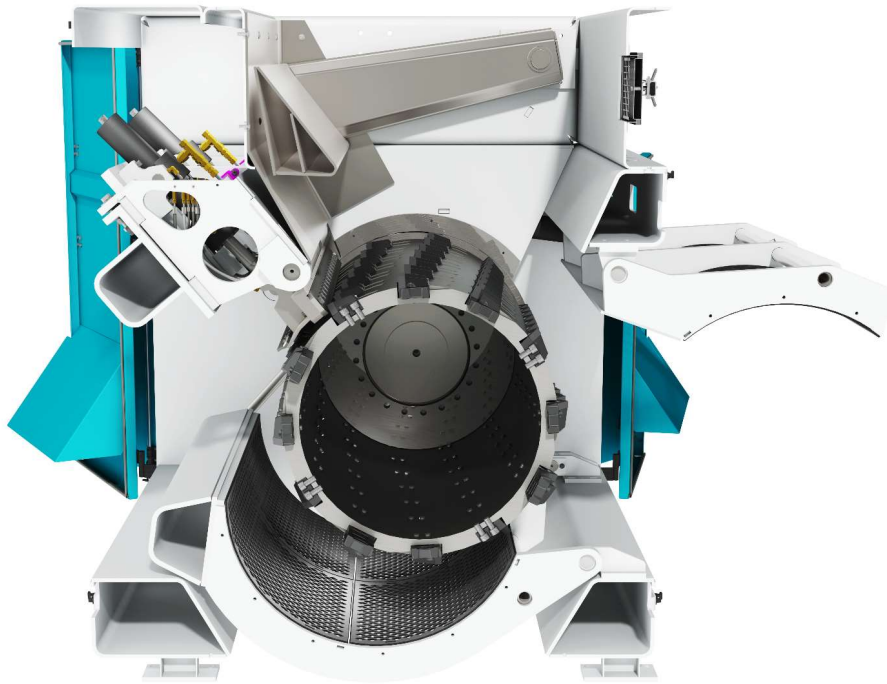


Optional equipment: Support frame

- The support frame enables installing the shredder easily on top of a discharge conveyor.



Maintenance: Easy access to all service points



Big doors and hatches

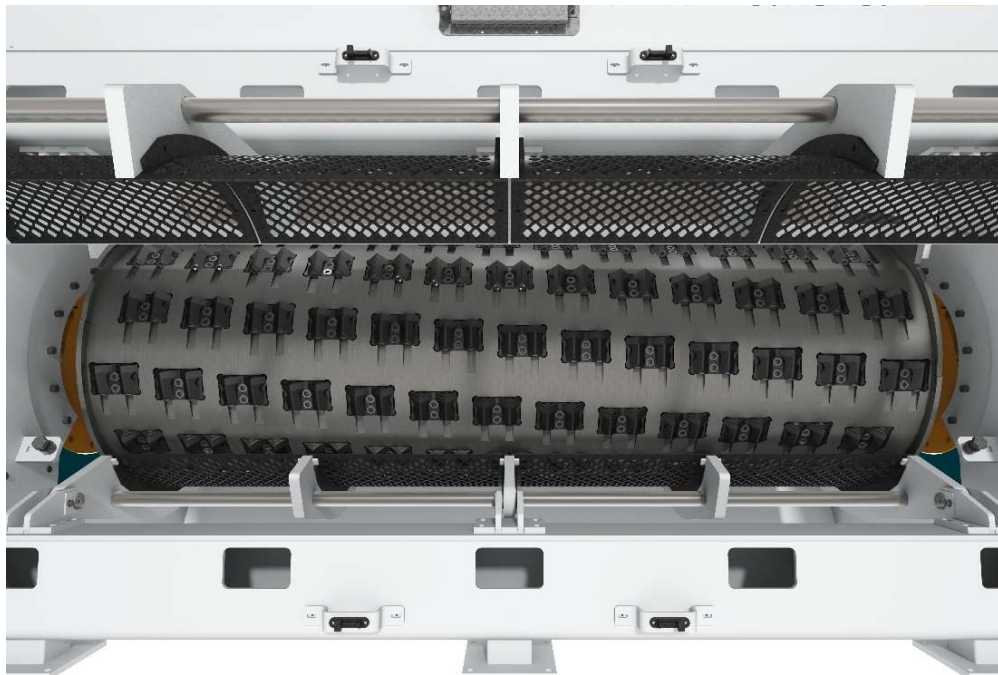
- Regular maintenance is safe and easy.
- Cleaning, servicing and replacing parts takes only a minimal amount of time.
- Big doors and hatches ensure easy access to the rotor, screens, and counter-knives.

Safe and easy maintenance

- No need for the operator to go inside the hopper.
- The screen opening is controlled by a hydraulic cylinder, which improves safety during service.
- The screen meshes can be pulled aside for easy and fast maintenance.

Knives: High number of cutting events

- A total of 312 knives results in a high number of cutting events.
- This tremendous amount of knives reduces the load per knife, which increases knife lifetime and optimizes the energy consumption.



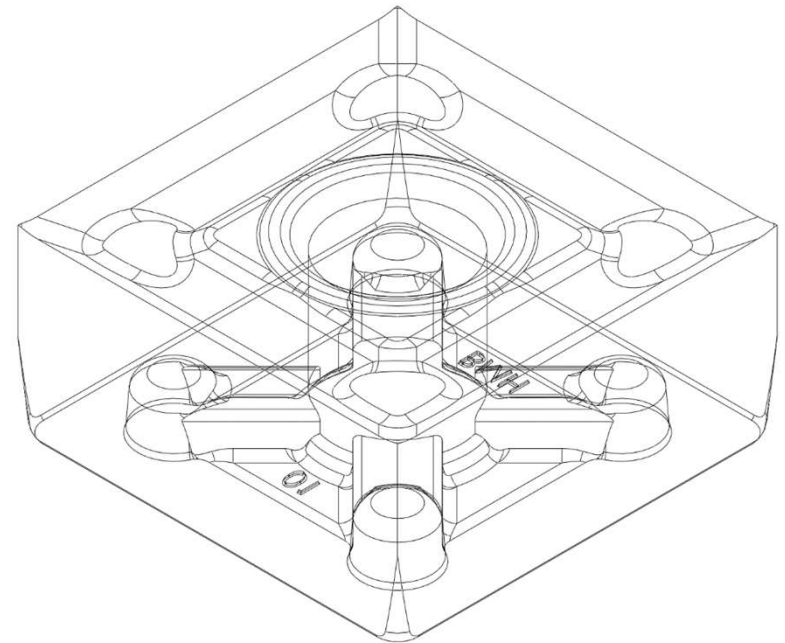
Knives: Quality and lifetime

Optimized particle size and quality

- The knife material, size and shape have been carefully selected to produce high RDF quality and to resist wear and fracturing.
- The small knife size also has a positive impact on particle size and quality.

Extended knife lifetime

- Opposite edges of the knife can be utilized by turning them 180° which creates a big saving in operating costs.
- In addition to the extended knife change interval, the quality of production stays even and capacity remains on a high level.



Summary

- Problem solved:

Customers need for homogenous and consistent particle size at high capacity

- Value:

1200A FineShredders produce consistently high capacity and stable RDF particle size

- Stand apart:

Higher capacity and availability thanks to unique counter-knife cassette, rotator, knife and screen designs.

Renewable future together.



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