

The difference a Weima shredder makes...



An Engineering Data
Presentation



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A large industrial waste processing facility with various material piles and processing equipment. The image shows a complex of machinery and conveyor belts handling different types of waste. Several red labels are overlaid on the image, identifying specific waste streams: Plastic Car Waste, Timber Waste, Paper and Cardboard Waste, Electronic Waste, Nylon Filament, A.B.S. Plastic Car Bumpers, PE-HE Thermoplastics, Plastic Film Waste, and Lump Polymer. The waste is being processed into smaller particles or granules.

Plastic Car Waste

Timber Waste

Paper and Cardboard Waste

Electronic Waste

Nylon Filament

A.B.S. Plastic Car Bumpers

PE-HE Thermoplastics

Plastic Film Waste

Lump Polymer

Examples of just a few of the many materials that the WEIMA range of size reduction equipment can process.

**Shredders, Granulators,
Briquetting Process,
Turnkey RDF Systems**

Universal-mounted pusher cylinders

The cylinders of WEIMA shredders, which push and pull the ram, are gimbaled. That means lateral forces are being avoided, which have a negative influence on the cylinders. Thus, the service life of cylinders and suspension are being significantly increased. Other manufacturers do not use this feature. As a result, impacts and lateral forces cannot be avoided. This increases the possibility of damages and therefore it has a negative effect on the maintenance costs of the machine.



WEIMA universal-mounted pusher



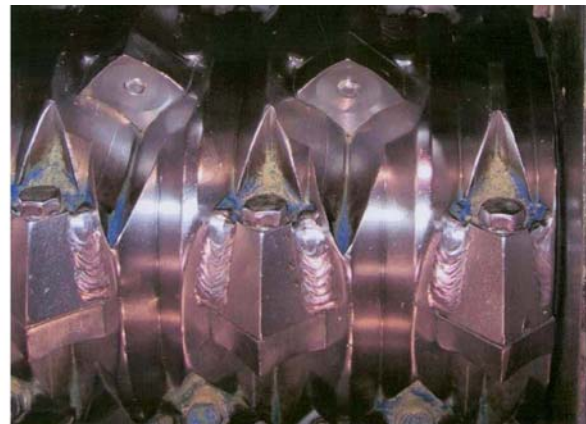
Competition with static built-in pusher

Mounting of knives and recessed hexagonal bolts

The knives are fixed using bolts with socket heads. These bolts are recessed in the knife holders. By recessing the bolt heads in the knife-holders the wear characteristics are kept to a significantly low level. This system ensures that they are easy to unfasten and as a consequence quick and easy to change. Most of our competitors do not offer recessed bolt heads on their rotors. They are using external hexagonal bolts which are not recessed in the knife-holders as this is cheaper for production. This means that the bolts cannot be removed without problems this makes the knife change very time-consuming because the bolts often have to be removed using angle grinder.



WEIMA with recessed bolt heads



Competition with external hexagonal bolts

Protected and space-saving hydraulic

The standard space-saving, dust-protected hydraulic system of a WEIMA shredder is located at the rear of the machine. Valves, which are constantly switching, are protected against dirt and dust and as a consequence are protected against costly malfunctions. In addition the compact machine design with integral hydraulics means that there is more room for traffic such as forklift trucks etc. Hydraulic units on competitor's machines are often not located inside the machine-frame offering no protection against dust and/or collision



WEIMA dust-and impact protected hydraulic unit



Competition with external hydraulic

Safety package – gearbox limit switch

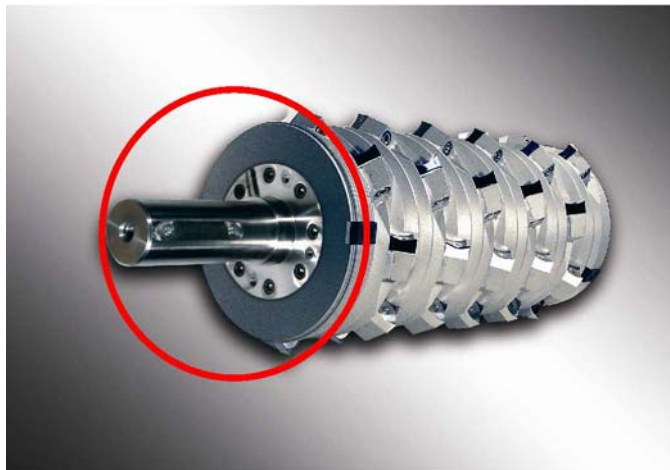
WEIMA shredders are equipped with a safety package, which prevents damage to the rotor caused by foreign objects. In the event of a foreign object like a hammerhead finding its way into the hopper of the machine a safety limit switch protects the gearbox. This is done by using a spring connection between the machine frame and the gearbox together with an electronic switch. This ensures that damage to the counter knife or numerous knives is avoided and the machine switches off automatically. Many other manufacturers do not offer this facility. In short, using the WEIMA safety package the risk of damage to rotor or gearbox is eliminated.



WEIMA gearbox limit switch

Bolted rotor shaft extension (rotor diameter of 368mm or bigger)

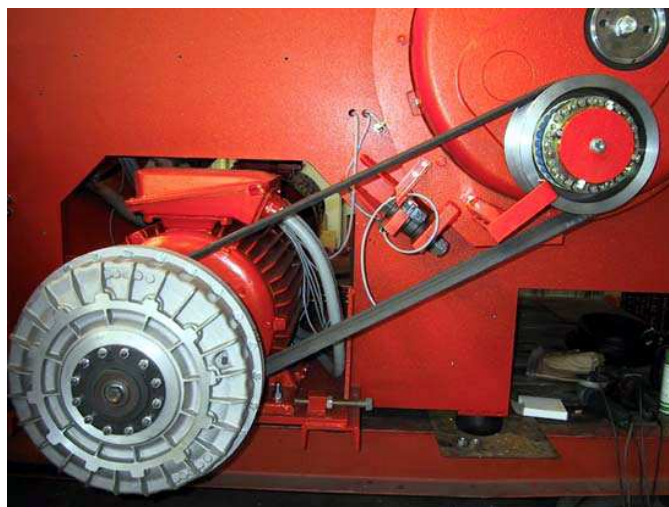
The bolted shaft extension brings the advantage that the rotor shaft can be offered in an especially hardened version. As a result the wear caused through the abrasion of the bearing is minimized. Therefore the shaft extensions do not have to be exchanged anymore. With a fixed rotor shaft extension the complete rotor has to be exchanged in case of a collision with a foreign object. This is not the case with a bolted shaft extension – the complete rotor does not need to be changed, only the extension.



WEIMA rotor with bolted shaft extension and hardened rotor shaft

Hydrodynamic centrifugal clutch (For 30 kW motors or bigger)

The clutch, which operates with an oil film, offers the advantage of a very smooth start up of the shredder particularly with a completely filled hopper. Extreme current peaks are being avoided; thereby energy costs can be drastically reduced. In addition, the hydrodynamic centrifugal clutch prevents the gearbox being damaged through a frequent reversion of the rotor.



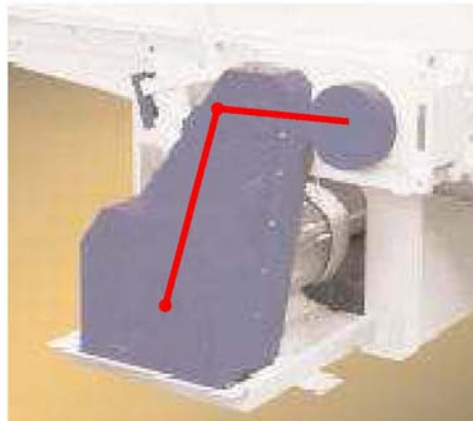
WEIMA with hydrodynamic centrifugal clutch

V-belt drive

The rotational speed and the power transmission are achieved with a WEIMA shredder on one axle and in a straight line. This offers hugely improved power transmission. Some competitors realize the power transmission not in a straight line but in an angle. This results in a more frequent reversion of the rotor and in an increased wear of drive and gearbox. Also the v-belts are exposed to an increased wear as the load on it is much higher.



WEIMA v-belt drive & power transmission



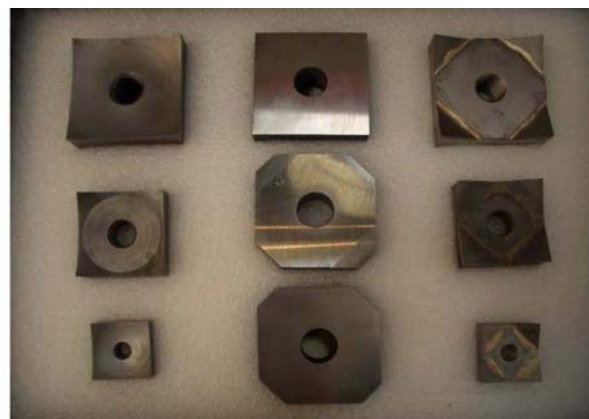
Competitor's power transmission

Knives, V-Rotor

WEIMA knife geometry is state of the art. Approved square knives with Weima quality obtain a much higher lifetime than competitor's knives. The patented V-rotor makes increased economic shredding possible compared to flat or spiral rotors (competition). Less heat is being developed due drastically reduced friction and through the sophisticated rotor geometry material is shredded more effectively with less energy consumption and an increased throughput.



WEIMA patented V-Rotor



Different WEIMA knives

WEIMA – Flat F-Rotor equipped with 3 rows of knives



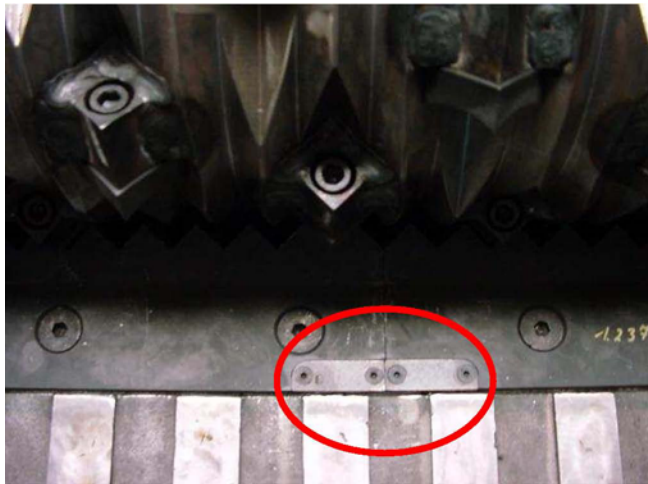
Designed for the shredding of difficult materials such as textile filaments, tapes, films etc, this is called the F rotor. It is characterised by a novel blade separation and a cutting geometry designed specifically for thin and woven material. This ensures an optimal shredding process along with high energy efficiency. When shredding multi-filaments, big bags, and also films with single shaft shredders, these materials tend to want to wrap themselves around the used rotors which are not designed specifically for these applications. Many materials like PP begin to melt due to the friction that arises, frequently leading to blocking of the machines. The new F-Rotor has been designed in such a way that the full length and diameter of the rotor engages completely with the stator blade and quickly shreds the material. The hugely reduced cutting gap in comparison to early rotor versions ensures controlled feeding of the material to be shredded, so that wrapping around the rotor is prevented.

Hydraulic Ram is operated according to load

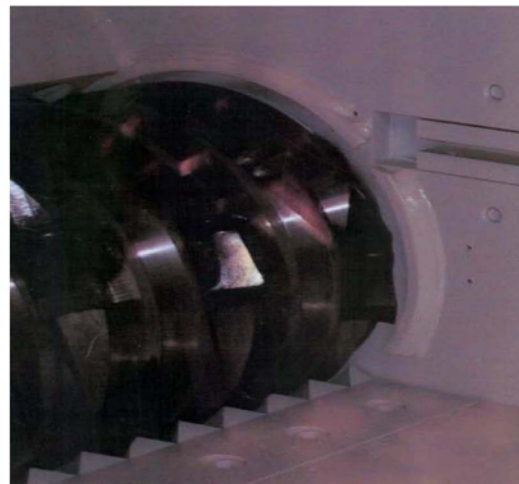
A load-sensitivity exists between rotor and ram. This means that the ram stops or even goes approx. 10mm back as soon as the ampere admission of the rotor remains on a certain level (ram pulsing as an option). The power acceptance of the rotor falls again, the ram switches into forward movement and power is being generated once again. An overloading of the drive is reduced and/or avoided completely. Many competitors do not offer this specific feature.

Adjustable counter knife (Standard WLK shredders, option WL shredders)

The cutting gap can be drastically reduced and adjusted perfectly with the adjustable counter knife. If the counter knife starts to wear and the cutting gap between rotor-and counter knife increases, the cutting gap can be reduced again through the adjustable counter knife this means that the counter knife lasts longer and does not to be changed as often. As a result, the performance and the throughput capacity of the machine are also improved. This feature is particularly important when shredding veneer or other thin material. Most competitors do not offer this feature.



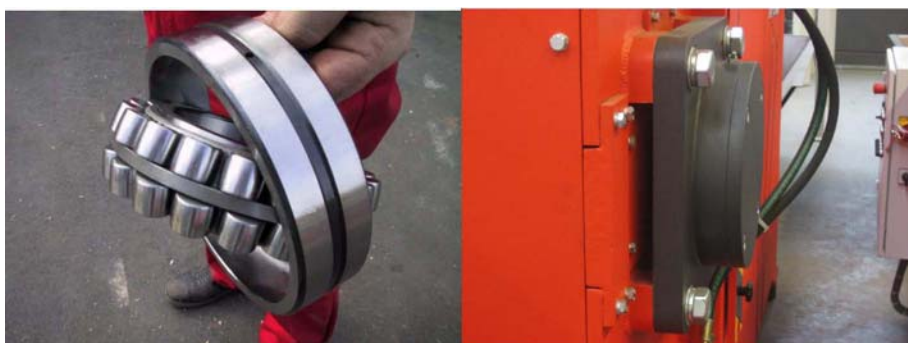
WEIMA with adjustable counter knife



Competition with fixed counter knife

Special rotor bearings: K-bearings (Standard WLK, Option WL-Series)

These closed low-maintenance and off-set spherical roller bearings are especially recommended for shredding of plastics and materials which generate a lot of dust. Plastics may heat up when being shredded and as a result may penetrate the rotor bearing. This penetration is avoided by using the special K-bearing because this bearing is not directly mounted in the machine-frame but offset. Therefore it cannot take in material from inside the machine. The longevity is significantly increased in comparison to competitor's open bearings. In addition the K-bearings are completely enclosed and protected from dust and particles but they still be changed extremely quickly. Bearings, which are open and directly mounted in the machine frame, have to be lubricated more often and take far longer to service or change.



WEIMA K-bearings – closed and maintenance-friendly rotor bearings

Segmented floor

The hydraulic ram of WEIMA shredders can be equipped with a segmented floor. This is particularly important when shredding very thin material like veneer, film or paper. The segments on the ram / floor make sure that no material gets stuck under the ram potentially causing a blockage. This can even cause damage to the ram cylinders, which move the ram forward and backward. Most competitors do not offer a segmented floor / ram as it is more expensive to manufacture



WEIMA pusher with segmented floor



Pusher without segmented floor

Brass guidance / pusher on rolls

Brass guides can be inserted instead of plastic guides in case of shredding very abrasive materials (particularly suitable when shredding pallets). A ram on roller can be offered as an option for applications with a high percentage of abrasive material. Other manufacturers do not offer these options. Therefore it is necessary to exchange the guides frequently if the customer has a lot of abrasive material. (Sometimes this can be the case after 200 operating hours). This is not only time-consuming but also quite expensive.



WEIMA pusher guidance



WEIMA pusher on rolls

Inside sealing of bearing, broaching knives

The rotor sealing inside the WEIMA shredder is bolted, so it can be easily exchanged in the event of wear. Competitor's rotor sealings are often just welded which is much cheaper in production but makes an exchange extremely difficult and costly. The broaching knives on Weima shredders are located very close to the rotor sealings. So the material is being cut to the utmost end of the rotor. On competitor's machines this is often not the case. Their broaching knives are located in a further in from the rotor sealing, this means that the material is not being cut at the end of the rotor and can penetrate the bearings through the bad sealing which can lead to damages and down time.



WEIMA bolted sealings



Welded sealing



WEIMA broaching knives

Ram comb / Ram comb plate

The hydraulic rams of the WEIMA shredders can be equipped with a so-called ram-comb for wood shredding or with a ram-comb plate for the shredding of plastics. This feature keeps the material in front of the pusher and avoids that the material escaping from the rotor. The ram comb / ram comb plate leads to a slightly increased throughput capacity and prevents material jumping out of the machine. The ram comb covers only the upper part of the pusher front whereas the ram comb plate covers the complete front of the pusher.



WEIMA hydraulic ram with ram comb plate WEIMA hydraulic ram without ram comb plate

Lifting Screen basket (Standard WLK, Option WL-Series)

WEIMA single-shaft shredders offer a movable screen basket which is available in manual or hydraulic. This enables our customers to maintain and to clean the machines very quickly and cost-effectively. This feature is especially important when shredding abrasive materials which results in an increased wear characteristics. A quick and easy turn or exchange of knives is possible with this feature as it offers extremely easy access to the rotor-and counter knives. In addition, the screen can be exchanged within a few minutes in order to reach a different fraction size.



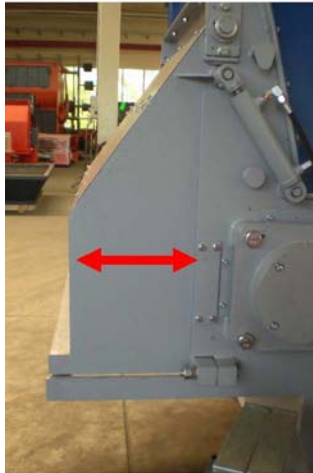
WEIMA liftable screen basket - closed



and opened

Screen basket extension (Option WLK-and WL-Series)

The shredded fraction, especially from film and fibres are being discharged through the screen in a highly compressed state, this happens during the process of shredding but expands back afterwards to its original volume. In order to avoid a blocking caused through this process, WEIMA shredders can be equipped with a screen basket extension which allows the flakes to be discharged out of the machine without pressure. For very light material, the process of discharging the material out of the machine can be greatly improved through an extended screen basket. If shredding a light material without an extended screen basket, the shredded material can stick between screen and screen basket. This can block the discharge of shredded material and can also lead to a frictional heating-up of the shredded fraction. In the case of thin film this leads to problems like the solidifying of shredded film fraction. In addition, the complete material discharge gets blocked and as an effect the throughput capacity decreases significantly.



WEIMA extended screen basket



WEIMA with standard screen basket

WEIMA WAP-Gearbox (Standard WL-and WLK-Series 55kW or bigger)

For motors of 55kW or bigger the WEIMA single shaft shredders are being equipped with a newly developed WAP gearbox. This special gearbox type has been designed, developed and manufactured by Weima. This gearbox type is an extremely maintenance-friendly and has a low-wear rugged design. The "shoe-box" design of our gearbox is a low maintenance design which allows the customer to open the complete gearbox by the removal of only one cover. There are only four sealings to the Weima gearbox, whereas competitor's gearboxes have several covers, much smaller cogwheels, bearings and shafts, and at least 7 sealings. A main advantage of the WAP gearbox is that it has been especially designed for the use in shredders which means it has been especially designed to absorb impacts which occur when a shredder is in use (as the material which is being shredded is never constant and homogenous). Thus this type of gearbox is much more solid and the wear characteristics are reduced to an absolute minimum.



The WEIMA WAP Gearbox – Standard on WEIMA-shredders with an output of 55kW or bigger

Rotor protection against abrasive materials (Option WLK-Series)

For shredding contaminated or abrasive materials (e.g. sand-contaminated agriculture film or glass-fibre materials) WEIMA offers a number of anti-wear protections. As the solid steel rotor is exposed to most wear caused through friction it should be the main focus to protect this costly machine part. For rotor protection WEIMA offers Creusabro 4500 or Vautid which both last a very long time due their extremely tough quality. Both forms of protection last much longer than the popular Hardox protection.



WEIMA Rotor with Vautid protection

Machine frame version 'Basic' instead of liftable screen basket (Option for WLK-Series)

If a customer is unable to take advantage of the movable screen basket for his specific application we are able to offer a bolted version of the screen basket. This option is particularly suitable if a customer shreds only clean production waste (low wear of knives) and if a customer shreds only one specific material type which does not force him to clean the machine due to material changes. This offers customer a reduction in costs as the basic version is cheaper to manufacture than the movable screen basket. On the basic version the cover of the screen basket can be removed with the removal of a few bolts and the screen is also bolted into the machine frame.



WEIMA version 'Basic' or with movable screen basket

Machine floor and Pusher ,Heavy-Duty' (Option for WLK-Series)

This optional feature makes sure that even very heavy or massive materials which are being thrown into the machine do not damage the ram or of the machine floor over time. This option is for strongly recommended for heavy pipes or lumps. The already strong steel plates of the machine are reinforced with additional crossbeams.



Additional cross-beams lead to an extremely reinforced execution of pusher and machine floor

Turbo hydraulic + Hydraulic Oil Cooling (Option for WLK13 or bigger)

For the shredding of flexible materials such as fibres, filaments or packing bands WEIMA offers an extremely fast acting hydraulic ram. This option makes it possible to set the ram speed leading to a significant increase in throughput capacity. The fast action of the ram requires a hydraulic oil cooling unit in order to avoid damage caused by heating of the oil. This equipment is in general a separate unit which is mounted in a protected box.



Gearbox Oil Cooling Unit (Option for WL-and WLK-Series)

For the use of a single shaft shredder at high ambient temperatures or in operational shifts we recommend a gearbox oil cooling unit. Hot oil changes its viscosity which can lead to damaged sealings, cogwheels and shafts. These problems can be avoided through the use of a gearbox oil cooling unit.



Pipe spacer / Bale spacer / Log spacer (Option for WL-and WLK-Series with movable screen basket)

Shredding of massive logs, bales, pipes or other hollow objects which are not made out of flexible material and which has a bigger diameter than the rotor diameter we recommend a Weima Pipe spacer / Bale spacer / Log spacer. The Pipe spacer makes sure that the material is not being pressed against the wall of the shredder but is in constant contact with the rotor until shredded.



Machine with Pipe spacer



Machine without Pipe spacer



shredding + briquetting

