



RECYCLING

ADURO SHREDDERS

PERFORMANCE MEETS DURABILITY

ANDRITZ

ENGINEERED SUCCESS

Trend-setting recycling solutions



E-SCRAP / REFRIGERATORS



REJECTS FROM THE PAPER INDUSTRY



WASTE-TO-VALUE RDF PRODUCTION



METALS AND SPECIALS



ORGANIC WASTE



WOOD WASTE



AUTOMOTIVE PARTS



PLASTIC WASTE



TEXTILE WASTE

AUGMENTED REALITY CONTENT

To show videos, illustrations and picture galleries in a more direct and lively way, we have added augmented reality to several pages!

Download the **ANDRITZ AR APP** from our website or in the AppStore/PlayStore!

SCAN THE PAGES MARKED WITH THESE SYMBOLS AND EXPERIENCE THE ENHANCED CONTENT.



ANDRITZ: your strong partner in recycling

ANDRITZ Recycling is a strong part of the ANDRITZ GROUP dedicated to converting waste streams into usable, valuable resources. Our rapid rise in the recycling world is the result of many strengths: many years of industrial and engineering experience, in-depth process knowledge, a well-established global network, financial strength, innovative team members, and a comprehensive range of recycling solutions.

ADURO SHREDDER LINE

The new ADuro product line for recycling shredders is synonymous with superior ANDRITZ performance, based on the vast know-how and experience of a global technology leader, and with a major focus on durability when it comes to today's most demanding recycling operations.

ANDRITZ Recycling has focused on the key processes to develop excellent single equipment units such as shredders, which are a critical component in any recycling operation. The ADuro product line comprises a broad range of innovative machines for primary and secondary shredding, fine granulation as well as breaking up material composites. ADuro shredders are perfectly suitable for processing almost all raw materials in the recycling industry and can also be installed easily in existing facilities, which keeps shutdown times for installation purposes to a minimum. By separating and treating many different waste flows, we make raw materials usable again, either as a source of additional revenue or by reusing the materials within the production cycle.



"The ADuro shredders set new industry standards and redefine recycling efficiency by processing diverse materials into valuable resources with a clear focus on robustness and cost efficiency."

THOMAS GEMEINER
Vice President, ANDRITZ Recycling



ADuro P

High throughput and continuous cutting for extreme applications

With its innovative, robust cutting system, this heavy-weight pre-shredder is capable of high throughput even in demanding applications. The ADuro P can process large volumes of a wide variety of bulky materials reliably and efficiently.

The robust ADuro P is a slow-rotating, single-shaft shredder with electric motor drive and a hydraulic pendulum pusher. The shredder features an innovative cutting system that can produce both small and medium particle sizes down to 50 mm, which is unusual for a pre-shredder. The screen is adaptable and can be modified to enable extremely high throughput for different applications. The unique design allows the shredder to function very well as a one-step processing unit.

The ADuro P can be equipped with a special rotor type featuring smaller teeth and an increased rotor speed. As a result higher throughput and smaller output size (down to 35mm) can be achieved.

View augmented reality content of the ADuro P in our augmented reality app!



**FOR FURTHER INFORMATION
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INPUT MATERIAL

- Household/industrial waste
- Bulky waste
- Rejects from the paper industry, rags
- Plastics
- Textiles
- Wood
- Paper
- RDF (Refuse Derived Fuels)



BENEFITS OF THE ADURO P

- Powerful shredding of a wide range of materials
- Innovative, continuous cutting system for high throughput and uniform results
- Hydraulic pendulum pusher that automatically adjusts the pressure on the input material
- Perfect accessibility for easy maintenance
- Highest machine protection with V-belt and safety clutch design

ADuro C

Pre-shredding for heavy-duty applications

The success of a recycling plant essentially depends on the first stage: pre-shredding of difficult materials. The ADuro C takes care of this task vigorously and reliably and prepares large-volume material to best advantage for further processing.

What makes this powerful rotary shear stand out is its special design, which ensures high operating reliability, easy maintenance, and higher throughput, even for the most demanding applications. The knives of the ADuro C shred the material into strips, whereby the size of the output fraction is determined by the width of the knives, which are available in 50, 70, or 100 millimeters. Key components of the ADuro C shredder are the coupled shafts. They facilitate knife exchange because the gear unit does not have to be dismantled during maintenance tasks. Downtime is thereby reduced considerably. In the second recycling stage, the pre-shredded material can be processed optimally with ADuro G, for instance, which breaks down the input material uniformly into the desired particle size.

INPUT MATERIAL

- Household and industrial waste
- Aluminum profiles
- Rejects from the paper industry
- Textiles
- Shredder light fraction
- Automotive parts and used tires
- Mattresses
- Cable scrap
- Barrels made of steel or plastic



BENEFITS OF THE ADURO C

- Suitable for a wide variety of applications
- Strong and robust machine design
- Reversing protects the machine, rotor, and knives thanks to automatic detection of impurities
- Hydraulic pusher for higher throughput
- Cutter with polygonal rotor shafts for high power transmission
- Coupled shafts for faster shaft exchange
- Precision-worked knives for exact cutting



ADuro U

One-step processing down to small particle sizes

With a large cutting surface area and unique cutting geometry, this powerful single-shaft shredder enables one-step processing to obtain particle sizes down to 10 mm. The ADuro U is a robust shredder that is capable of processing bulky materials (e.g. whole logs, large plastic containers, etc.) down to very small particle sizes in a single step. An output size of 10 mm is possible thanks to an adaptable and adjustable screening system, which is ideal for a wide variety of applications.

The cutting component of the ADuro U consists of an array of knives positioned both lower and higher and which overlap continually when cutting. This results in the incoming material being broken down uniformly and cut cleanly.

INPUT MATERIAL

- Household/industrial waste
- Whole logs
- Bulky plastics
- Rejects from the paper industry
- Textiles
- Wood
- Paper
- Cables (from household appliances, underground cables)



View video footage of the ADuro U in our augmented reality app!

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BENEFITS OF THE ADuro U

- One-step processing down to 10 mm particle size
- Powerful shredding of a wide range of input materials
- Innovative cutting system with large surface area
- Hydraulic pendulum pusher with adjustable speeds and pressures
- Full accessibility to wear parts for easy maintenance

ADuro S

The next generation in secondary shredding

The ADuro S is a single shaft shredder with a rotor width of up to 3,200 mm and capable of handling very large capacities, thus ideal for processing waste streams, like RDF, SRF, MSW as well as commercial and Industrial waste.

The powerful ADuro S is outstanding due to its special design. The Intelligent Pusher Control can detect the pressure, rotation speed and power consumption of the shredder according to the machine load and uses the data to control the pusher pressure and speed in order to ensure continuous cutting of the material with a high throughput. Three different rotors are available for the ADuro S shredder. The modular system of the design means that the rotor is tailored according to the input material used. Two of the available rotors have a unique knife holder exchange system. This new feature involves a clamping mechanism for the knife holders, which can be easily and quickly exchanged, thus greatly reducing the machine downtime.

INPUT MATERIAL

- RDF (Refuse Derived Fuels)
- MSW (Municipal Solid Waste)
- Industrial waste
- SRF (Solid Recovered Fuel)
- Plastics



BENEFITS OF THE ADuro S

- Large cutting width of 3,200 mm
- Low input energy and low power consumption
- High throughput and performance
- High availability and durability
- Flexibility of three different rotor types
- Knife holder exchange system available
- Easy knife gap adjustment
- Inside pusher
- Large maintenance openings for maintenance and repair



ADuro G

Flexible and reliable fine-shredding

The well-proven ADuro G shredder is designed to achieve uniform results and convinces particularly with its versatile fields of application.

The ADuro G operates according to the principle of guillotine shears. The input material is cut above rotating knife blocks on stationary knives. The granulating screen mounted underneath with variable hole sizes of 6 to 120 mm determines the output grain size as well as the respective throughput. The cutter blocks are placed in the mountings provided both at the rotor and at the stator. The gap between the cutter blocks is adjustable, which ensures optimum processing of thin and composite materials.

INPUT MATERIAL

- Domestic, industrial, and bulky waste
- Tires
- E-scrap, electric motors
- Cable scrap
- Oil filters
- Rejects from the paper industry
- Metal composites
- RDF (Refuse Derived Fuels)
- Textiles, carpets, PVC flooring



BENEFITS OF THE ADuro G

- Uniform and high-quality output fraction
- Processing of solid, non-hardened metals
- High performance reserve, also for shredding of challenging materials
- Adjustable and low-wear cutter blocks
- Solid structure to absorb impacts safely
- Precise setting of the cutting gap for very fine composite materials
- Robust and reliable rotor
- Advanced pusher design for higher throughput

ADuro H

Contaminant-resistant cutting system for various applications

The ADuro H is a horizontally fed and high-capacity shredder mainly used to process municipal solid waste, industrial waste, and wood used as biomass. The material is usually fed via conveyor to a vibrating table that distributes it evenly to the cutting unit, which consists of a rotor equipped with specially arranged cutting tools. The special design of the cutting unit with four rows of high- and low-mounted cutters arranged in an X-pattern and the different screen sizes allow for a greater level of flexibility in terms of output material.

Its resistance to potential contaminants is based on a swiveling cutting system, which ensures that the flexible cutting tools inside the rotor react when a contaminant enters the cutting unit. This makes the ADuro H extremely versatile in wood, RDF and MSW processing.

INPUT MATERIAL

- MSW (Municipal Solid Waste)
- Industrial waste
- Wood, bark



BENEFITS OF THE ADuro H

- Resistance to contaminants due to swiveling cutting system
- High-capacity shredding of a wide range of input materials
- Innovative cutting unit with large surface area
- Hydraulic service door for easy access to the interior
- Vibrating table for smooth and efficient feeding



ADuro F

Efficient grinding with less dust

The ADuro F is used for efficient fine grinding of pre-shredded input material down to a very accurate granulate size and even finest powder, while keeping dust to an absolute minimum. The ADuro F is adept at grinding hard-to-handle materials such as paper, cardboard, or wood (either clean or residual). The input material with a particle size of < 40 - 50 mm is usually fed into the machine with a screw or belt conveyor. In order to prevent harmful contaminants from entering the machine, non-ferrous fractions are normally separated by a pneumatic system and ferrous materials are removed by a magnet.

The cutting unit consists of hammers that are mounted on the rotor. Once the material is ground to the proper size, air flow from an integrated fan pushes the ground material through a screen with very fine mesh. This minimizes the amount of dust generated and maximizes the throughput efficiency of the ADuro F.

INPUT MATERIAL

- Dry wood (low moisture content)
- Paper
- Cardboard
- Cables
- Textiles
- RDF (Refuse Derived Fuels)



BENEFITS OF THE ADuro F

- Small and very accurate granulate size
- Integrated fan to reduce the amount of dust
- Easy combination with magnet and stone trap
- Service door for fast and easy access to the cutting unit
- Low-wear hammers, rotatable in four different directions
- Easy and efficient separation of individual fractions thanks to additional discharge exit

ADuro M

High precision for a fine cut

The ADuro M is the final shredding step in a recycling process and granulates pre-shredded material precisely and quickly. The machine reduces the input material to a particle size of less than 4 mm and thus breaks up the last remaining material composites. The results are defined, pure-grade, granule-sized secondary raw materials. The individual fractions, such as copper, aluminum and plastics, can be separated with a metal separator to be available with high purity and in a quality that can be used to make new products.

Milling in the ADuro M is achieved by the shearing effect between rotor and stator knives. The "double diagonal cutting geometry" creates a precise cutting gap over the entire working width of the machine. The screen mounted underneath the cutting rotor determines the fraction size (< 4 mm) and the respective throughput with variable mesh sizes.

INPUT MATERIAL

- Cables
- Tires
- Plastics
- PVC floors
- Injection molding
- Plastic film
- Paper



BENEFITS OF THE ADuro M

- Robust machine design
- Low space requirement
- Highly durable stator and rotor knives
- Pre-set knives ensure short downtime for replacement
- Hydraulic device for accessing the cutting area
- Hydraulic screen basket for fast screen change
- Mechanical and electrical safety systems
- Energy-efficient drive system

ADuro QZ

Gentle and fast disintegration of composite materials

With the ADuro QZ, ANDRITZ has revolutionized traditional shredding technology. Originally designed for processing refrigerators and e-scrap, the machine has evolved to a real multi-talent and focuses on disintegration of the input material without damaging the individual components.

The operating principle of the ADuro QZ is based on flexible, rotating chains that accelerate the input material to achieve variable speeds and paths. The material is disintegrated and opened up by the impact of the accelerated materials colliding with one another. The individual fractions (like iron, plastic, printed circuit boards, cables, and copper coils) are exposed and can be easily separated in downstream processes. Components that contain hazardous substances remain intact and can be disposed of without any negative impact on the environment.

INPUT MATERIAL

- E-scrap and refrigerators
- Printed circuit boards
- Composite materials (metal/plastic, iron/non-ferrous metals, aluminum/plastic)
- Hazardous waste (paint tins, aerosol cans, batteries)
- Production waste (steel/aluminum turnings)
- Glass-fiber reinforced plastics
- Packaged food, organic waste, energy crops
- Scrap cans
- Automotive parts



View video footage of the ADuro QZ in our augmented reality app!

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BENEFITS OF THE ADuro QZ

- Efficient single-stage processing
- No sharp cutting of hazardous components
- Reduced internal wear due to acceleration tool technology
- Quick access to valuable component fractions
- Insensitive to solid metal parts
- Quick tool changing
- Highly tempered special steel for walls and tools
- Batch operation and continuous feeding possible
- Special design of chains available for longer lifetime (special hardened, alloyed steel)



Optimize your recycling operation with Metris shredIQ

Metris shredIQ is a tool that combines the power of the well-proven ANDRITZ Digital Solutions and tailors those IIoT technologies to the recycling industry. It helps in achieving higher machine availability and maximizing performance based on the Metris UX Platform.

Metris shredIQ was developed to solve today's digitalization challenges in the recycling industry. Tailored to single customer needs, Metris shredIQ can be configured and adapted individually to meet the requirements of a single unit application or a complete recycling plant.

To exploit the capabilities of existing systems, Metris shredIQ measurably enhances plant performance by using valuable data in the most efficient way. With this cutting-edge approach, we can provide a completely new user experience with comprehensive product support and ensure smoothly operating machinery.

Metris shredIQ enables immediate assistance with smart documentation via the My Equipment app as well as efficient commissioning support. By using data analytics and condition monitoring with the Metris Vibe sensor, processes and operations are monitored and visualized based on significant KPIs, including the option to automatically generate reports. The partIQ feature additionally offers access to the Metris Spare Parts Catalog, where customers can request immediate offers for required spare and wear parts for any machine configuration. By using Metris applications,

plant operators can increase the overall efficiency of their equipment and reduce the risk of operating errors.

Benefits

- Smart product documentation
- Production transparency via mobile app access and automatic reports
- Online spare and wear part catalog
- Online support
- Machine monitoring and predictive maintenance
- Enhance availability and minimize production costs
- Increase overall equipment efficiency and reduce risk of operating errors
- Wireless online diagnosis of critical machine infrastructure (systems/parts)

Taking service to a higher level

ANDRITZ Recycling can help you to keep your operations running smoothly and reliably. Our services are designed to complement your own in-house capabilities: to fill in the gaps and add expertise where needed so that you have the most cost-effective program possible.

In any production environment, it is always a benefit to have expert eyes and ears to support your own staff. Our service teams have the specialized instruments and analytical tools at hand to monitor equipment performance and diagnose problems. We do this not only for ANDRITZ-branded equipment, but for all the major equipment in your plant from other OEMs.

RELIABILITY. AVAILABILITY. OPTIMIZATION.

We offer a range of mechanical, electrical, and process services aimed at improving the reliability and availability of your plant equipment and extending its useful life. You save time and money by eliminating unplanned shutdowns and disturbances. Our services can be performed as needed, or on a more cost-effective contractual basis as offered in our ANDRITZ SYNERGY service agreements to keep plant availability high.

Regular maintenance, good housekeeping, periodic inspections, and access to the correct replacement parts are all essential for smooth operation of your plant. By establishing a disciplined approach to these activities, plant availability will remain high throughout its entire life cycle. Taking a long-term perspective in planning for these factors and relying on a dependable partner to help execute them will reduce your overall operating costs and maintain your efficiencies.

YOUR BENEFITS

- Smoother operation
- Maximum production and throughput
- Improved equipment availability and reliability
- Reduced lifetime costs
- Improved safety
- Shorter shutdowns, fewer disruptions
- Improved energy efficiency
- Well-managed spare/wear parts program
- 24/7/365 coverage
- Worldwide network



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OUR ENVIRONMENT IS A TREASURE TO BE PRESERVED

So are the raw materials contained in your waste products. Let us help you utilize them to best advantage. ANDRITZ Recycling is actively demonstrating its commitment to conserving valuable resources by offering a wide range of capabilities in the recycling industry. Our technologies cover solutions for processing rejects from the paper industry, e-scrap, metal and special waste, organic waste, end-of-life vehicles, wood, plastic and textile waste as well as applications for generating energy from various waste products.

ANDRITZ Recycling Service develops recycling solutions that pay off for the customer for the complete lifecycle of your mill or equipment. From the supply of spare parts, routine work during a scheduled shutdown, to quick response during a disruption or the implementation of our latest IIoT solutions, we are available to keep operations running smoothly.

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