RECYCLING

ADuro SHREDDERS

PERFORMANCE MEETS DURABILITY
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 brand reflects our strong focus on R&D and stands for continuously enhanced shredder design with IIoT features to achieve the optimum operating point.”

MICHAEL WAUPOTITSCH
Vice President Reject and 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 ADuro P to function very well as a one-step processing unit. When processing particle sizes below 50 mm, the ADuro P can be easily combined with other ANDRITZ ADuro shredders to achieve the desired material size.

INPUT MATERIAL
- Household/industrial waste
- Bulky waste
- Pulp and paper rejects, pulper rags
- Plastics
- Textiles
- Wood
- Paper

BENEFITS OF THE ADuro P
- Powerful shredding of a wide range of materials
- Innovative, continuous cutting system for high throughput
- Hydraulic pendulum pusher with adjustable, variable speed and pressure
- Perfect accessibility for easy maintenance
- Highest machine protection with V-belt and safety clutch design

FOR FURTHER INFORMATION
SEE PAGE 2

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

ADuro C

Pre-shredding without compromise

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
- Pulp and paper rejects
- 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
- Pulp and paper rejects
- Textiles
- Wood
- Paper

**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**
- Refuse derived fuels (RDF)
- Municipal solid waste (MSW)
- Industrial waste
- Solid recovered fuel (SRF)
- Plastic waste

**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

FOR FURTHER INFORMATION
SEE PAGE 2
**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 RDF and MSW processing.

**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

**INPUT MATERIAL**

- Municipal solid waste (MSW)
- Industrial waste
- Wood waste

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**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
- Waste from the paper industry (rejects, pulper rags)
- Metal composites
- RDF material
- 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

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**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 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 10–30 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

**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

**INPUT MATERIAL**
- Dry wood (low moisture content)
- Paper
- Cardboard

**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.

INP UT 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!

FOR FURTHER INFORMATION SEE PAGE 2

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

FORESEE DIGITALLY WITH METRIS

Industrial IoT, Industry 4.0, digitalization – current buzzwords that industries use when seeking to improve their performance and equip themselves for the future of industry.

ANDRITZ DIGITAL SOLUTIONS
As a technology leader with extensive and long-term experience in supplying industrial measurement, control, and optimization solutions for various industries, ANDRITZ is combining process and equipment expertise with the latest enhancements in the digital era. The result of this powerful combination is Metris: a portfolio of ANDRITZ Digital Solutions.

METRIS OPP
One of the flagship capabilities of Metris is its ability to optimize industrial processes, known as Metris OPP, which forms a key component of the SYNERGY DYNAMIC PLUS package. It combines powerful analytical and data mining software with the knowledge of the world’s top process experts to deliver a smart service initiative for customers.

A CONSTANTLY GROWING PORTFOLIO
The depth and effectiveness of the Metris portfolio continues to improve thanks to ongoing R&D collaboration with key customers and institutions, and venture activities. Portfolio options all rely on the three strategic focus areas of the Metris brand: Industrial IoT technologies, Smart Service concepts, and Venture activities. The main technological advancements integrated into individual Metris products are derived from big data analytics, smart sensor technologies, and augmented reality solutions. The Metris UX digitalization platform providing full support throughout the entire life cycle of a plant is the most recent of our IoT developments. With Metris, customers foresee digitally due to the continuously improved portfolio and its performance – and to ANDRITZ providing tailored and fully integrated digital solutions from a single source.

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

INDUSTRIAL IOT
- IoT solutions across business segments
- Combined know-how from ten years’ experience with Metris OPP
- Using the latest smart sensor technologies
- Big data analysis with tried-and-tested models for deviation analysis
- Providing information locally with augmented reality
- Extensive solution and process engineering knowledge
- Cybersecurity solution to safeguard data on the network

BENEFITS
- 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
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- Highly tempered special steel for walls and tools
- Batch operation and continuous feeding possible

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FOR FURTHER INFORMATION SEE PAGE 2
Taking service to a higher level

Customers appreciate having an ANDRITZ Recycling expert on site to help them diagnose process or equipment problems and offer solutions to improve reliability and performance. That is why we maintain local service experts in key locations, backed by the global network of a leading technology supplier.

As a part of the international ANDRITZ GROUP, ANDRITZ Recycling has the support and strength of an extensive global network of service specialists, machining centers, rebuild shops, and service locations. These centers are strategically located close to customers – around the globe. From routine work during a scheduled shutdown to quick response during a disruption, ANDRITZ Service specialists work side-by-side with the customer’s team to diagnose, offer training or recommendations, provide replacement parts, or perform repair services as needed to keep operations running smoothly.

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.

ANDRITZ SYNERGY SERVICE AGREEMENTS

For companies where equipment maintenance and repair is not a core competence, one solution we offer is to contract for these services. With the backing of a global support network, you can be sure that your plant is being serviced on the basis of the latest technical findings and in compliance with all aspects of safety – achieving high availability and safeguarding rated capacity and output.

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

View video footage of this topic in our augmented reality app!

FOR FURTHER INFORMATION SEE PAGE 2
GLOBAL TECHNOLOGY – LOCAL SERVICE

ANDRITZ Recycling is more than an equipment supplier. We develop recycling solutions that pay off for our customers. Our knowledge and expertise are available to help customers truly optimize their operations. As a part of the international ANDRITZ GROUP, we are backed by the strength of an extensive global network of service specialists, machining centers, rebuild shops, and service locations. From the supply of spare parts, routine work during a scheduled shutdown, to quick response during a disruption, we are available to keep operations running smoothly.

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