FROM TRASH TO TREASURE

Innovative reject treatment systems

ANDRITZ

Recover raw materials and maintain values

A primary aim across all sectors is maximizing production while minimizing waste to enhance profitability. This objective extends to communities and individuals. As manufacturers of advanced recycling technology, we are dedicated to conserving resources and creating a cleaner future. We take pride in the significant economic, environmental, and social benefits our efforts yield.

Turning waste into cash

Every recycled fiber line needs a proper water, sludge, and reject treatment system to operate economically. The first and obvious goal is to minimize costs for resources (water, energy) and disposal.

In addition, rejects are valuable and generate income, for example metals as raw materials and plastics as a source of energy. For recycling, rejects from the recycled fiber process require optimal, appropriate treatment.

The process must be cost-effective and simple, and it must fulfill certain requirements to ensure that the rejects or their component parts can be utilized thermally, sold or re-used, or disposed of with minimum cost and effort. All this requires careful handling of the rejects and a thorough knowledge of the individual process steps.

BENEFITS

- Compliance with legal requirements for protection of the environment, e.g. landfill directives
- Reduction of disposal and transportation costs
- Pre-treatment of rejects for fuel generation (RDF)
- Reduction of greenhouse gas emissions (CO^2)
- Additional income from sale of raw material (e.g metals or plastic)

“Waste paper’s high recovery rates make it a vital substitute for virgin fiber in the paper industry. However, careful handling of rejects from the pulping process in waste paper recycling lines is essential, requiring tailored solutions, which we provide.

THOMAS GEMEINER
Vice President Recycling at ANDRITZ

“Our portfolio offers innovative technologies for managing paper mill waste, enhancing material recovery and generating alternative energy sources, reducing a mill’s dependency on landfills, fossil fuels, and purchased power.”

MARIO DROBIR
Director Global Technology,
RDF and Reject at ANDRITZ

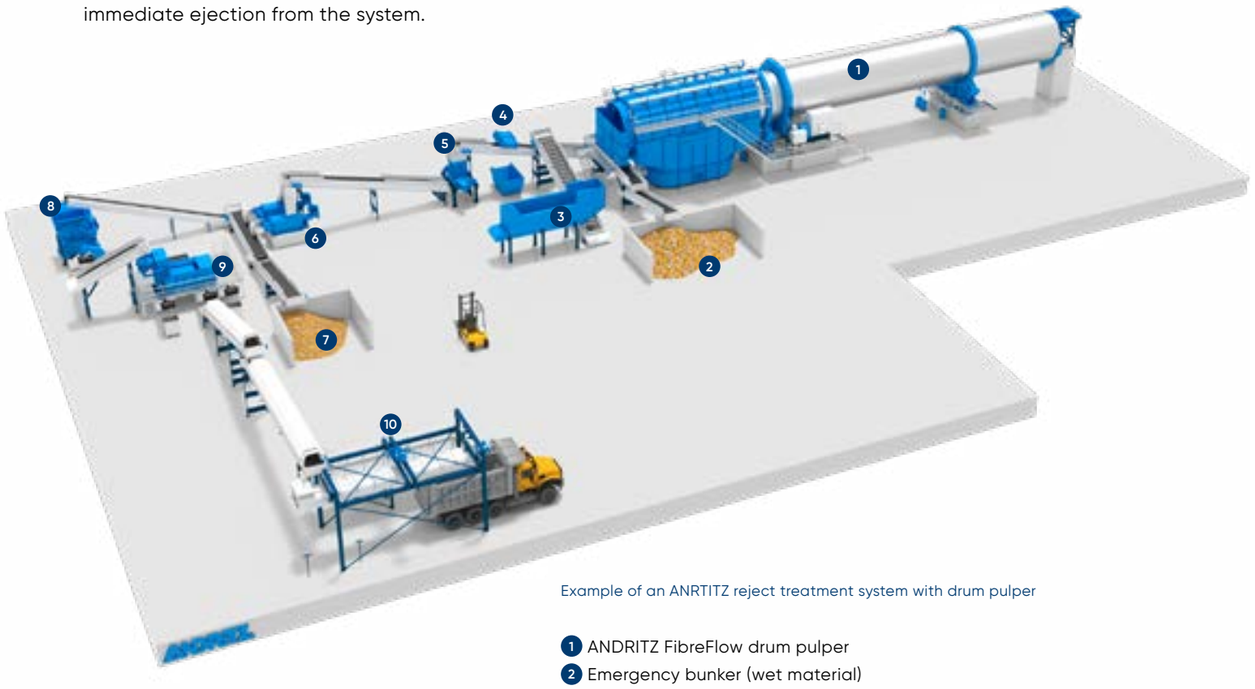
Take advantage of ANDRITZ Reject Systems

METAL SEPARATION AND DETECTION

Ferrous metals are separated by magnetic separators, whereas non-ferrous metals are ejected by eddy current separators. Large pieces of ferrous metal are removed from the process at an early stage to protect the subsequent process equipment. Small metal pieces and non-ferrous metals are typically separated after fine shredding to create an extremely pure ferrous portion. Effective metal detection prevents large particles from causing malfunctions and damaging process machinery. Bulky metal pieces cause change in an electromagnetic field, which detects the metal pieces. A signal to the conveying system control unit ensures immediate ejection from the system.

COMPACTING

The reject material fed to the ANDRITZ Reject Compactor ReCo is conveyed by a rotating screw and compressed in a counter pressure unit by two hydraulically actuated pressure flaps. Wear-resistant, heavy-duty baskets retain the solids, while the filtrate flows through the holes in the baskets and is collected in a tray. The final dryness depends on the type of reject material and its fiber content.



Example of an ANRTITZ reject treatment system with drum pulper

1. ANDRITZ FibreFlow drum pulper
2. Emergency bunker (wet material)
3. Infeed bunker
4. Coarse ferrous-metals separation with ANDRITZ ReMet-BE
5. Coarse shredding with ADuro C shredder
6. Reject dewatering with ReCo-C
7. Emergency bunker (dry material)
8. Fine shredding with ADuro P shredder
9. Metal separation (ferrous, non-ferrous) with ANDRITZ ReMet-DP/EC
10. Truck loading station

GOOD TO KNOW
When the process is complete, customers benefit from an extremely pure ferrous portion.

Example of an ANDRITZ reject system for conventional pulping

1. LC pulper
2. Online rag shredding with ADuro C shredder
3. Reject dewatering with ReCo-C
4. Buffer bunker
5. Fine-shredding with ADuro P shredder
6. Metal separation (ferrous, non-ferrous) with ANDRITZ ReMet DP/EC

GOOD TO KNOW
ANDRITZ' online rag shredding solution enables fully automated rag processing without manual intervention.

SHREDDING

Shredders are typically fed coarse rejects from pulping and coarse screening. Coarse particles are reduced to the desired size by slowly rotating shafts fitted with wear-resistant cutting devices. A screen plate determines the particle size. ANDRITZ ADuro shredders are easy to install and have good accessibility, their robust design ensures reliable operation with little maintenance.

SEPARATION OF UNWANTED COMPONENTS

Near infrared technology (NIR) can be used to detect and classify a wide range of various plastic materials (PP, PE, PVC, etc.). Depending on the end use of the raw material recovered (e.g. chloride from PVC is critical for corrosion in boilers), one or several detected components can be ejected by compressed air nozzles. The separator requires a certain dryness and particle size distribution.

Key eqipment ANDRITZ Reject Compactor ReCo-C for optimal dryness levels

WATCH THE ReCo-C IN ACTION!

WATCH THE ReCo-F IN ACTION!

SAND AND HEAVY-PARTICLE SEDIMENTATION

Low-consistency rejects with high heavy-particle content – typically coming from cleaning stages – need different treatment. The suspension is fed into a gravity sedimentation chamber. The heavy particles that settle are discharged by an inclined spiral screw conveyor. Sufficient retention time and optimal machine design ensure high filtrate quality and low maintenance.

SLUDGE DEWATERING

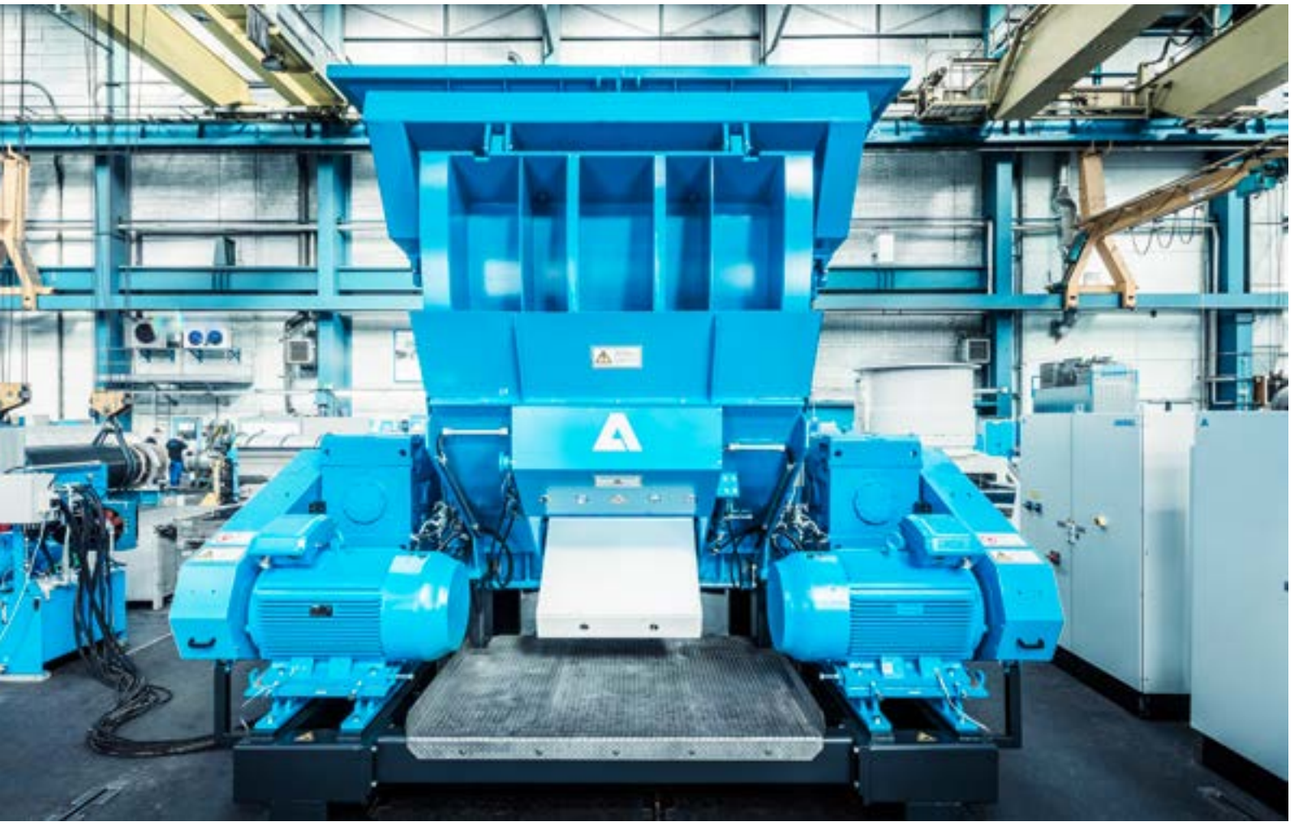
Sludge is mixed with flocculants and pre-thickened gently on a gravity-based thickener. The final dry content is achieved with a screw press applying maximum shear forces. The high-quality filtrate from the system reduces the requirements in water clarification. Both units provide superior uptime and availability, as well as low maintenance for continuous and flexible operation.

SEWAGE WATER SCREENING

A protection system is required ahead of sewage treatment plants, biofilters and similar plants; and for recovery of suspended solids. A revolving, endless filter belt with specially designed hooks is submerged into the sewage channel and collects contaminants. The mesh size of the high-strength filter elements determines the water quality. The units can be installed quickly into any type of channel. They are reliable to operate and easy to maintain due to their compact, robust design.

GOOD TO KNOW
Our technological solutions have proven themselves in more than 100 successfully operating installations.

WATCH THE MACHINE IN ACTION!



ANDRITZ ADuro P shredder with hydraulic pendulum pusher

Converting rejects into valuable resources and energy

As an environmentally-friendly global technology leader, we regard supplying waste-to-power systems as an important mission.

MAJOR DRIVING FORCES

- No landfill permitted in the EU starting in 2011
- Costs for landfill are steadily increasing
- Transport costs are extremely high for low specific weight and wet material
- Energy costs are rising sharply
- Rejects are an energy source with high calorific value
- Recovery of internal mill waste decreases energy and cost dependency

RECYCLING SOLUTIONS FOR PULPER RAGS

For a long time, pulper rags have gone primarily to landfills. In the past few years, however, their potential has been identified as a secondary raw material source. This waste from the paper industry largely consists of steel wire, which can be recovered and reused if the right shredding technology is available. Nevertheless, the difficult-to-handle pulper rags make considerable demands on machines. ANDRITZ has developed a solution for this application that has already been proven successfully in many recycling operations.

A fully-automated online rag shredding process in which no manual manipulation of the rags is necessary, feeds the rags directly into an ANDRITZ ADuro C primary shredder, which is ideally suited for powerful and, at the same time, energy-saving pre-shredding of the stringy input material. The shredded rags are then dewatered by a Reject Compactor ReCo. Metal separators extract the valuable steel portion. If a further reduction of the non-ferrous metal content is requested in the substitute fuel portion, the concept can be extended to include other suitable separation technologies.

By developing components for each process step, we also gain an understanding of how individual equipment performs best within the overall system. As a result, ANDRITZ reject systems are designed to be as lean as possible, but as strong as necessary. We have many years of experience in woodyard and fuel preparation processes, drying of biomass, refining and grinding, pelleting, and with biomass boilers and gasifiers. Reject systems complete the chain of subsystems to produce energy from pulp and paper mill waste.

Online rag processing: The pulper rags are pulled out of the pulper, cut, and shredded fully automatically.

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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