

## **Waste-to-value**

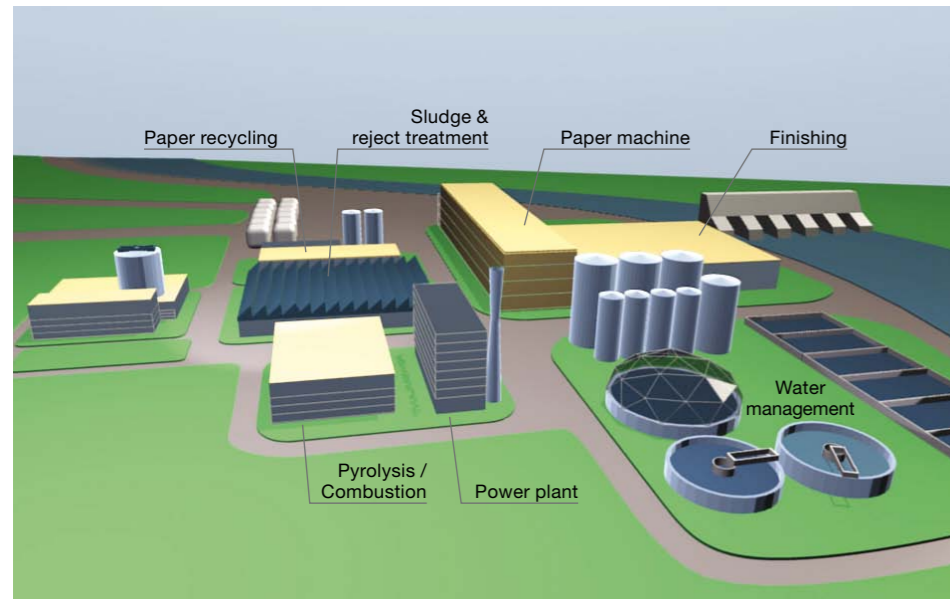
Innovative recycling of mill waste



# Are you wasting your waste?

## How to make profit from mill waste

Innovative technologies for sludge and reject handling, material separation and recovery, and production of renewable energy help you reduce dependency on purchased power or fossil fuels and eliminate landfilling of waste – thus improving your mill's profitability.

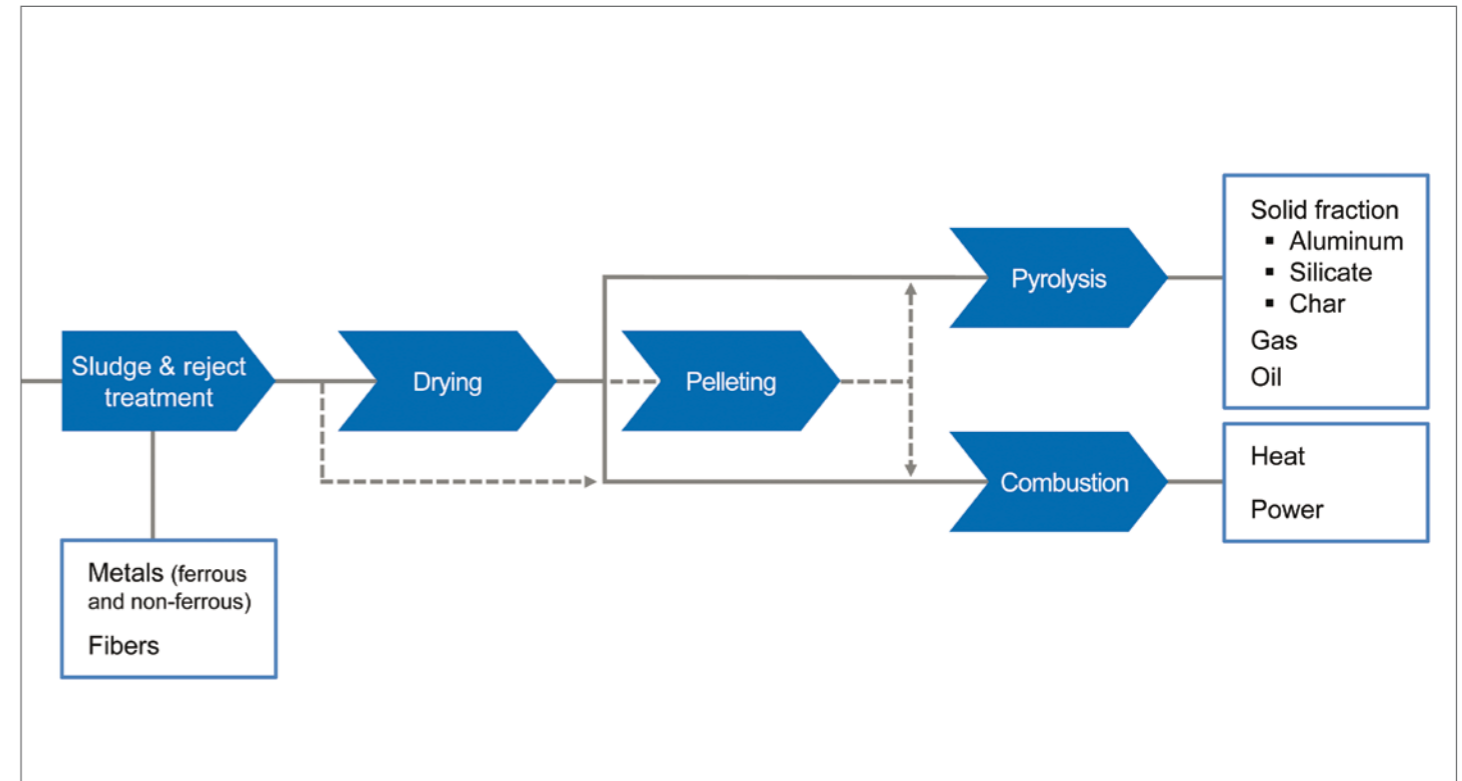


### Benefits

- No wasting of waste
- Producing substitute fuels and valuable by-products
- Improving profitability by closing the material and energy loops
- Important contribution to environmental protection and energy saving

# Creating value through recycling

## Turning mill waste into fuels and products



### High waste costs?

Mill sludge and other types of waste are costly to handle and transport and difficult to dispose of. This is particularly true in the processing of recycled fiber material, containing plastics, metals, and other contaminants. Other waste components are the sludge from deinking and water treatment, as well as wood residuals from the pulp mill.

### Trash to treasure

Waste-to-value processes enhance your mill's profitability by recycling the mill waste products. Such processes are the source of renewable energy (gas and oil) and valuable by-products, such as aluminum and bio-char. Modular system designs with scalable sizes can be adapted to the waste streams.

### Creating fuels

ANDRITZ supplies innovative technologies, processes and equipment for the conversion of waste into valuable fuels. These systems include equipment for sludge and reject handling, drying, pelleting, pyrolysis, and combustion – contributing towards recovering resources and closing the recycling loop.

	Pelleting systems	Pyrolysis systems	Combustion systems
Application	Preferable for small volumes or when product is transported or stored for long periods of time	Preferable for high reject content in the feed stock	Preferable when high fuel flexibility is required
Fuel heating value	Flexible: low/high heating value fuels	Flexible: low/high heating value fuels	Best suited for low heating value fuels
Sludge volume	Handles large volumes of sludge (DIP or bio-sludge)	Handles variable volumes of sludge mixed with rejects	Flexible: low/high volume of sludge (DIP or bio-sludge)
Energy efficiency	Adjustable and high heat value thanks to drying with recovered energy	Entire system is energy self-sufficient; surplus of heat and energy available	Stable combustion when heat value is adjusted
Ash	High ash content allowed	Ash can be converted into valuable products	High ash content allowed
Product	Odorless, stable, solid pellets	Aluminum and other metals, char, gas oil	Steam for turbo-generator
Capacity range	Single-line pelleting press: 30-100 t/d	Single-line pyrolysis: 500-1,500 kg/h	Power boiler: 40-350 MWth

# Closing the material and energy loops

## ANDRITZ systems and equipment

### Sludge and reject handling

ANDRITZ has engineered solutions for new and existing recycled fiber lines and waste handling applications:

- Shredding
- Compacting
- Ferrous or non-ferrous metal separation
- Separation of unwanted or harmful contaminants
- Sludge dewatering

### Drying and pelleting

ANDRITZ provides a range of drying technologies suited for all types of biomass and wastes. Rotary drums, belt dryers, compact multi-bed units, etc. are particularly suited for low-grade waste sources.

ANDRITZ pellet mills and auxiliary equipment are acknowledged globally as reliable and proven pelleting systems.

### Pyrolysis and combustion

ANDRITZ offers innovative pyrolysis technology for full recycling of plastic rejects and laminates (plastic-aluminum compounds).

ANDRITZ power boiler technology – well suited for biomass and alternative fuels – has high combustion efficiency, and the equipment is designed for high availability and a long service life.



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