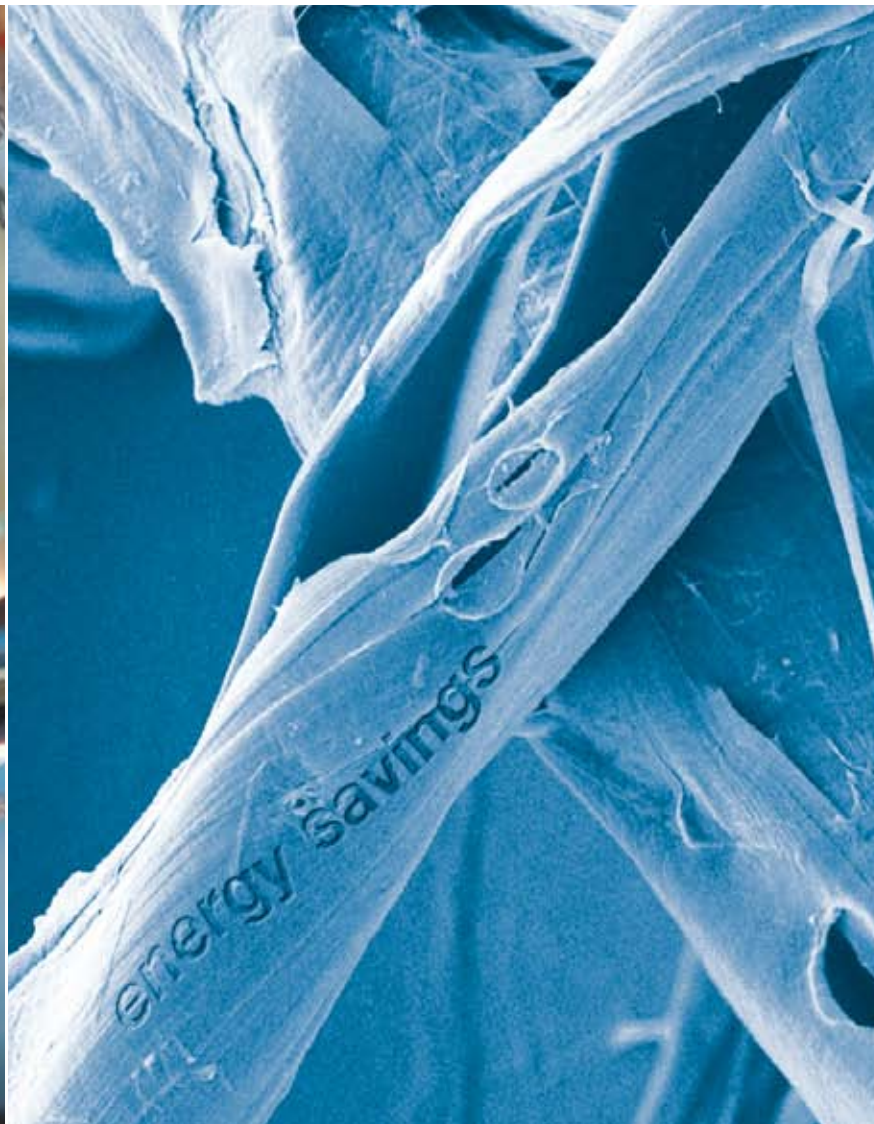


## Advanced TMP

Focus on energy savings and improved mechanical fibers





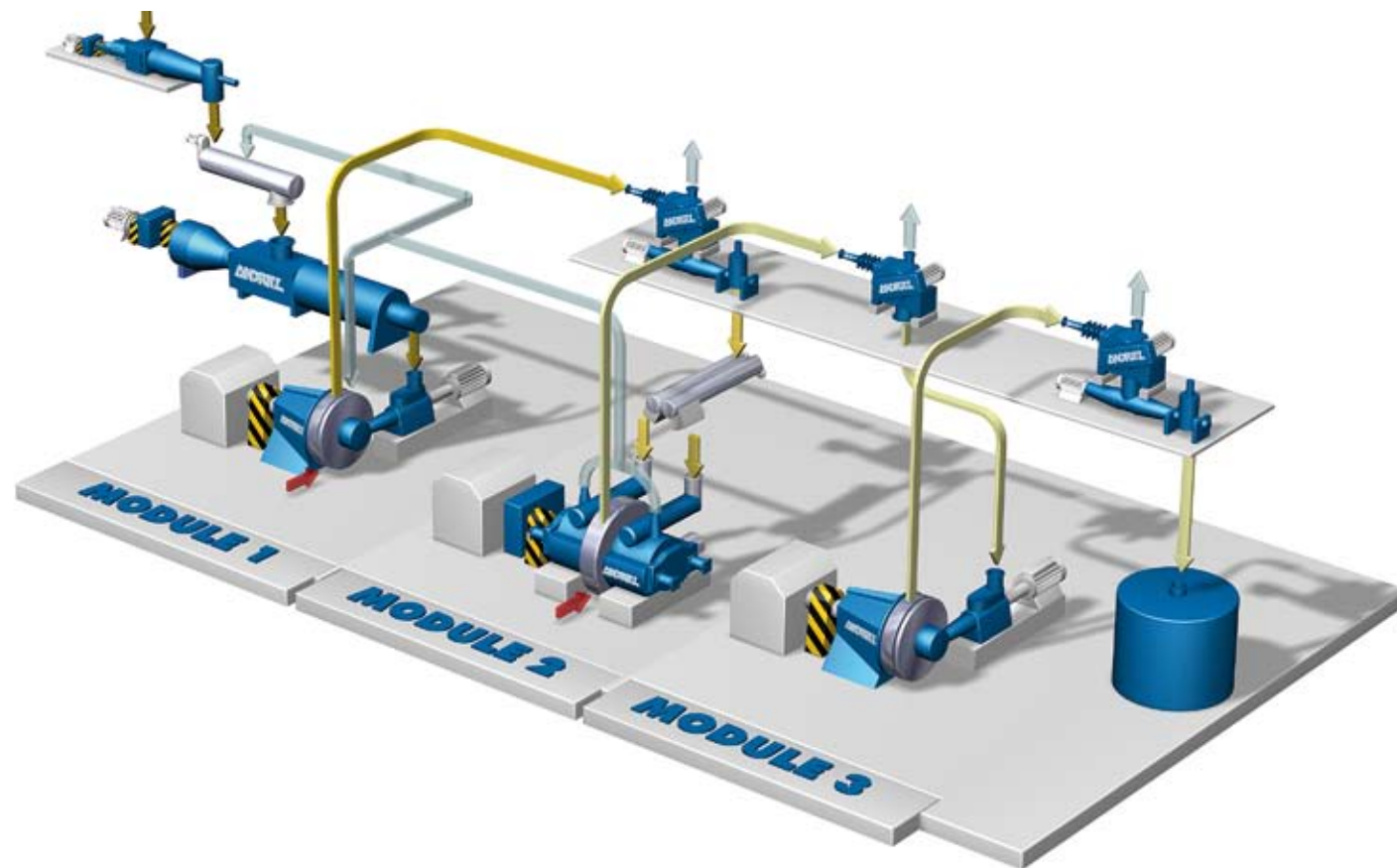
# The challenge: enhanced fiber development with reduced energy consumption

Energy is a huge cost for TMP producers which can possibly limit the acceptance of mechanical grades in the future.

The future of mechanical pulping depends on the ability to produce competitive pulp properties at reduced costs.

Yet, TMP production offers superior benefits in terms of yield and optical qualities – providing four times the surface per ton of wood for both publication papers and board grades compared to chemical pulp-based products.

ANDRITZ Advanced TMP (*ATMP*) technology is the latest in a series of breakthroughs to reduce electric power consumption, reduce greenhouse gas emissions, and produce quality pulp even when substituting new and/or lower wood qualities.



**ATMP combines *RTFibration*, high-intensity *RTS* refining, and the right chemical treatment.**

*ATMP* focuses on optimizing the process steps:

- Defibration – separating the fibers
- Fibrillation – creating the optimum bonding surfaces
- Pretreatment – precise chemical addition to the defibrated chips
- Primary refining – using high-intensity, energy-saving technology

The above process steps within the *ATMP* system are modular and can be configured for optimum performance in each unique TMP application.

# The ANDRITZ solution: Advanced Thermo Mechanical Pulping (*ATMP*) technology

## MODULE 1 *RTFibration*

Efficient separation of chips into fibers

Part of the success of the *ATMP* process is that chip defibration and fibrillation of fibers are conducted in separate steps.

*RTFibration* gently separates the wood fibers using a combination of pressafining and refining actions in a moderately pressurized environment.

## MODULE 2 High intensity *RTS* refining of pre-treated fibers

ANDRITZ *RTS*-TMP technology is more energy-efficient due to the fact that it increases the primary stage refining intensity without compromising pulp quality.

The speed and intensity, combined with optional moderated chemical addition, produce energy savings with excellent optical and strength pulp properties.

This high-intensity *RTS* refining of pretreated chips produces energy savings greater than 20% when compared to conventionally produced TMP pulps.

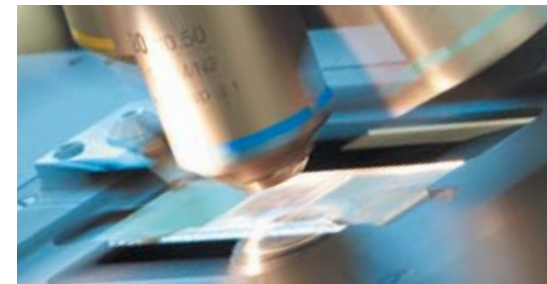
Applying a small amount of chemical treatment (e.g. sodium bisulfite) on fiberized chips at the primary refiner further reduces energy consumption and improves pulp quality (higher strength, higher brightness).

## MODULE 3 HC or LC refining

Efficient refining to create bonding area

The high energy efficiency and pulp quality at lower freeness in the primary stage requires less refining energy in the second stage.

This creates the opportunity for the use of energy-efficient low consistency refiners in the second stage and/or for reject refining – while further reducing specific energy consumption of the entire production line.



## From chip to fiber: Individual steps

RT-pretreatment



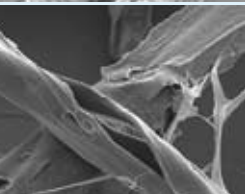
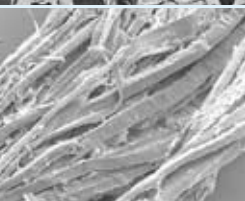
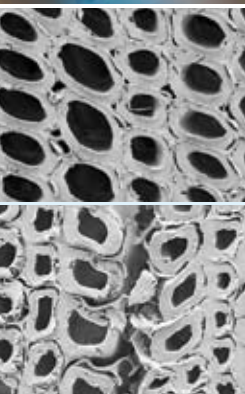
Fibration



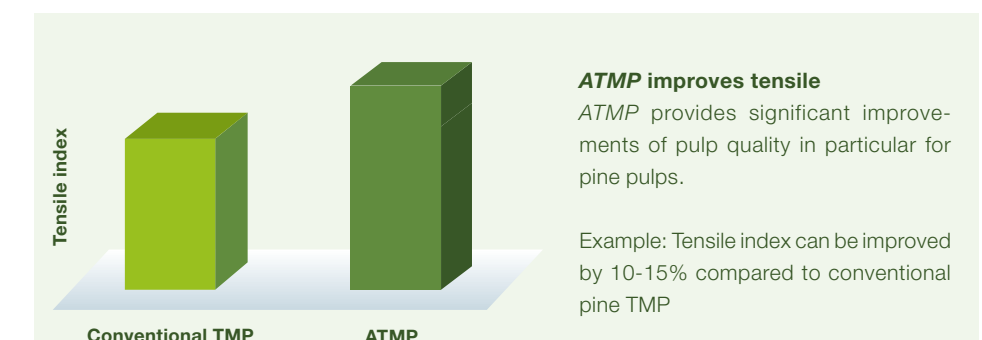
Primary refining



Secondary refining



ANDRITZ refiners are designed to meet the capacity and quality requirements of modern TMP systems.



## ATMP improves tensile

*ATMP* provides significant improvements of pulp quality in particular for pine pulps.

Example: Tensile index can be improved by 10-15% compared to conventional pine TMP

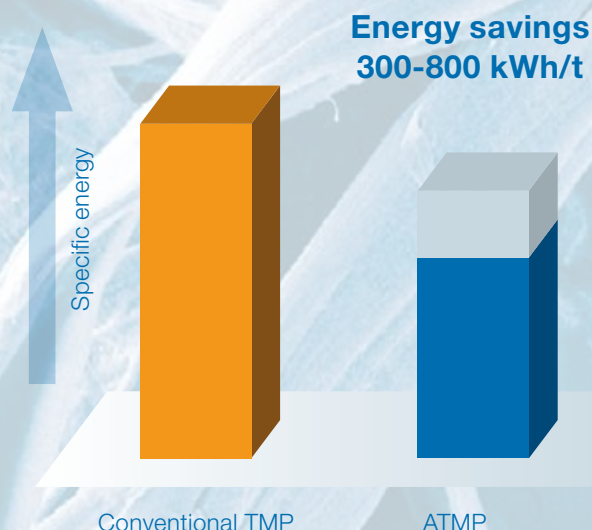


# Advanced TMP

## Energy-efficient technology

### Benefits

- Energy savings from 300 – 800 kWh/admt
- Efficient production
- Better pulp quality
- Higher bonding strength
- Reduced shives
- Reduced extractives content
- Higher brightness (both bleached and unbleached)
- Applicable to a variety of softwood species
- Significant improvements on pine pulp properties
- Modular system – easy to retrofit
- Excellent economic payback



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