



# EMPOWERING TISSUE PRODUCERS: ANDRITZ FULL-LINE SOLUTIONS FOR QUALITY AND SUSTAINABILITY

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**ANDRITZ**

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# 01

## ANDRITZ INTRODUCTION

# NO CHALLENGE IS TOO BIG – A PIONEER IN LARGE-SCALE TECH SOLUTIONS WORLDWIDE



## WHAT WE DO

Developing large-scale,  
state-of-the-art engineering  
and service solutions



Elevating customer  
operations with  
state-of-the-art technologies



Supporting our customers'  
operations with  
lifecycle services

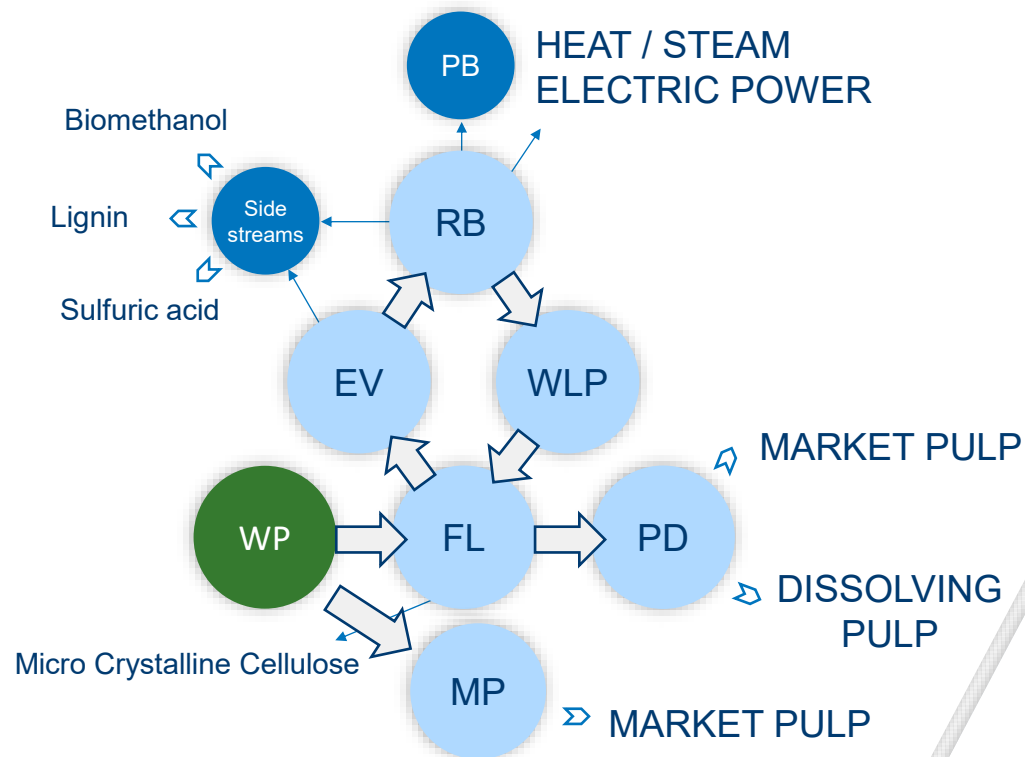


Empowering our  
customers to drive the  
green transition

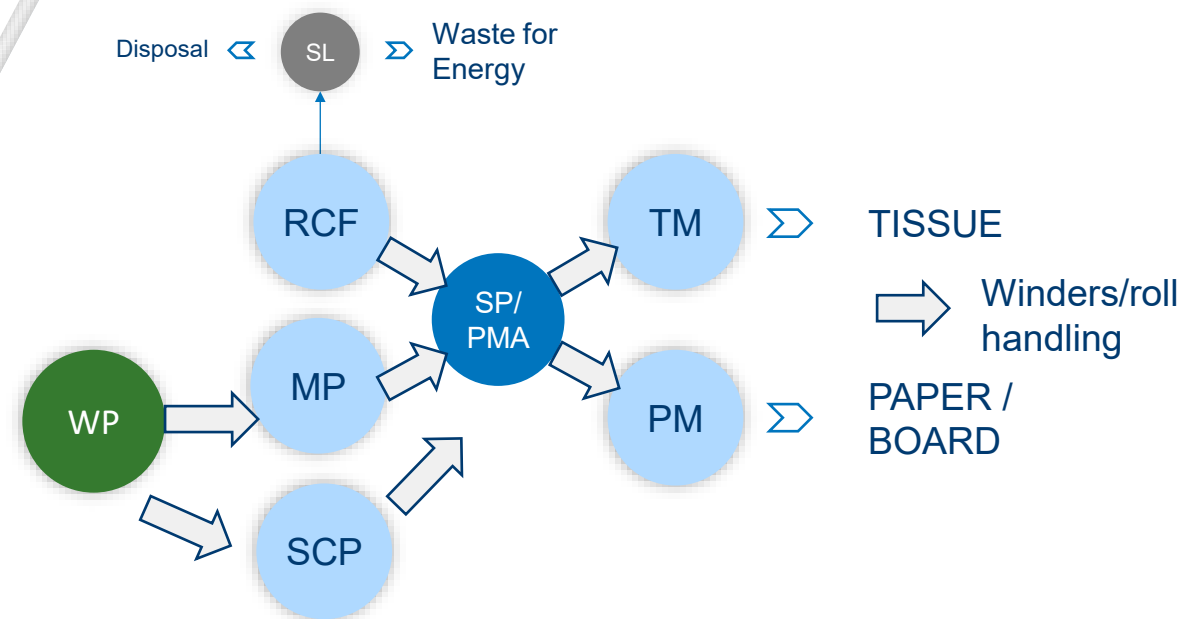
# FULL LINE CAPABILITIES OF PULP & PAPER



## PULP



## PAPER



**WP** – Wood processing  
**FL** – Fiberline  
**PD** – Pulp Drying

**EV** – Evaporation  
**RB** – Recovery Boiler  
**WLP** – White Liquor Plant

**PB** – Power Boiler  
**MP** – Mechanical pulping  
**SCP** – Semi Chemical pulping

**RCF** – Recycled Fiber Processing  
**SP/PMA** – Stock preparation and approach flow

**TM** – Tissue Paper/Board Machine  
**PM/BM** – Paper/Board Machine



# OUR PURPOSE

## CREATING GROWTH THAT MATTERS





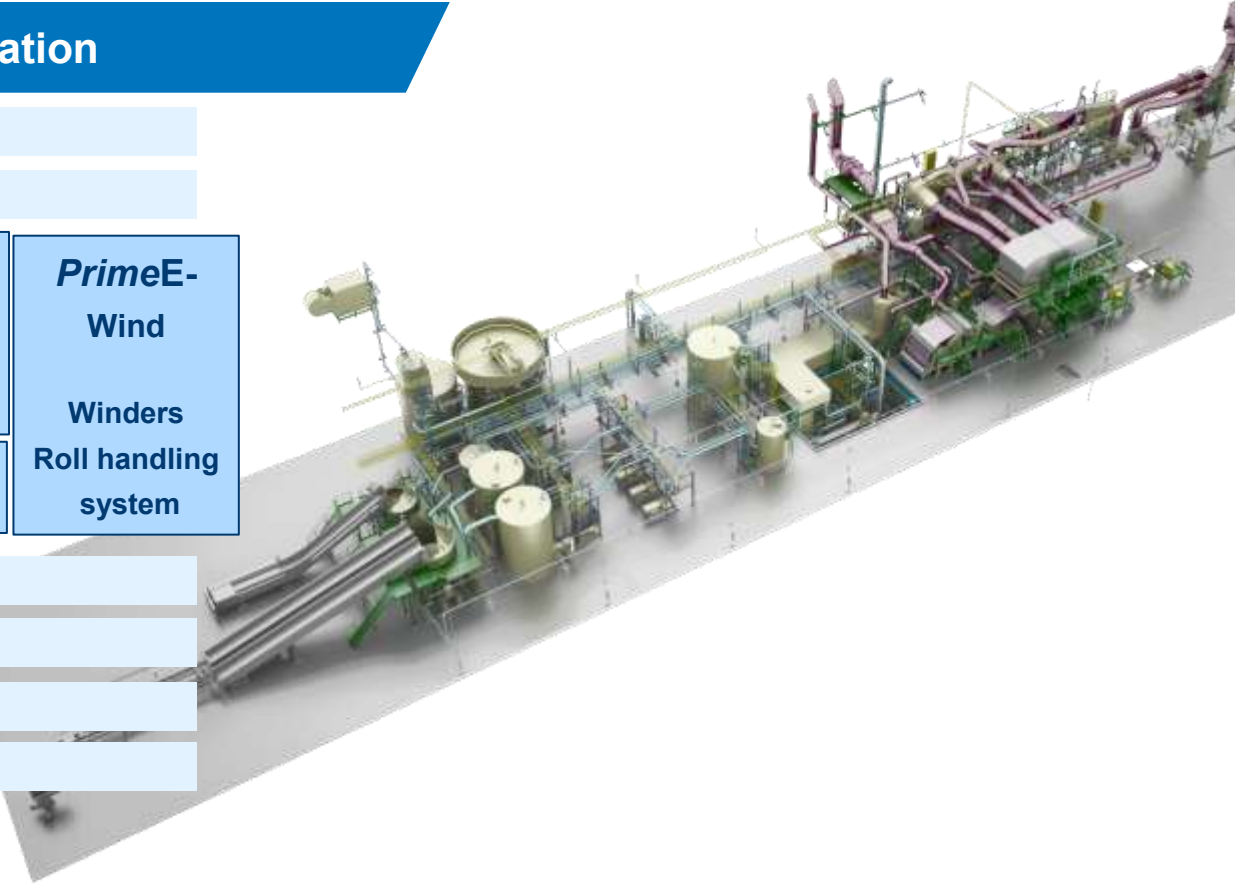
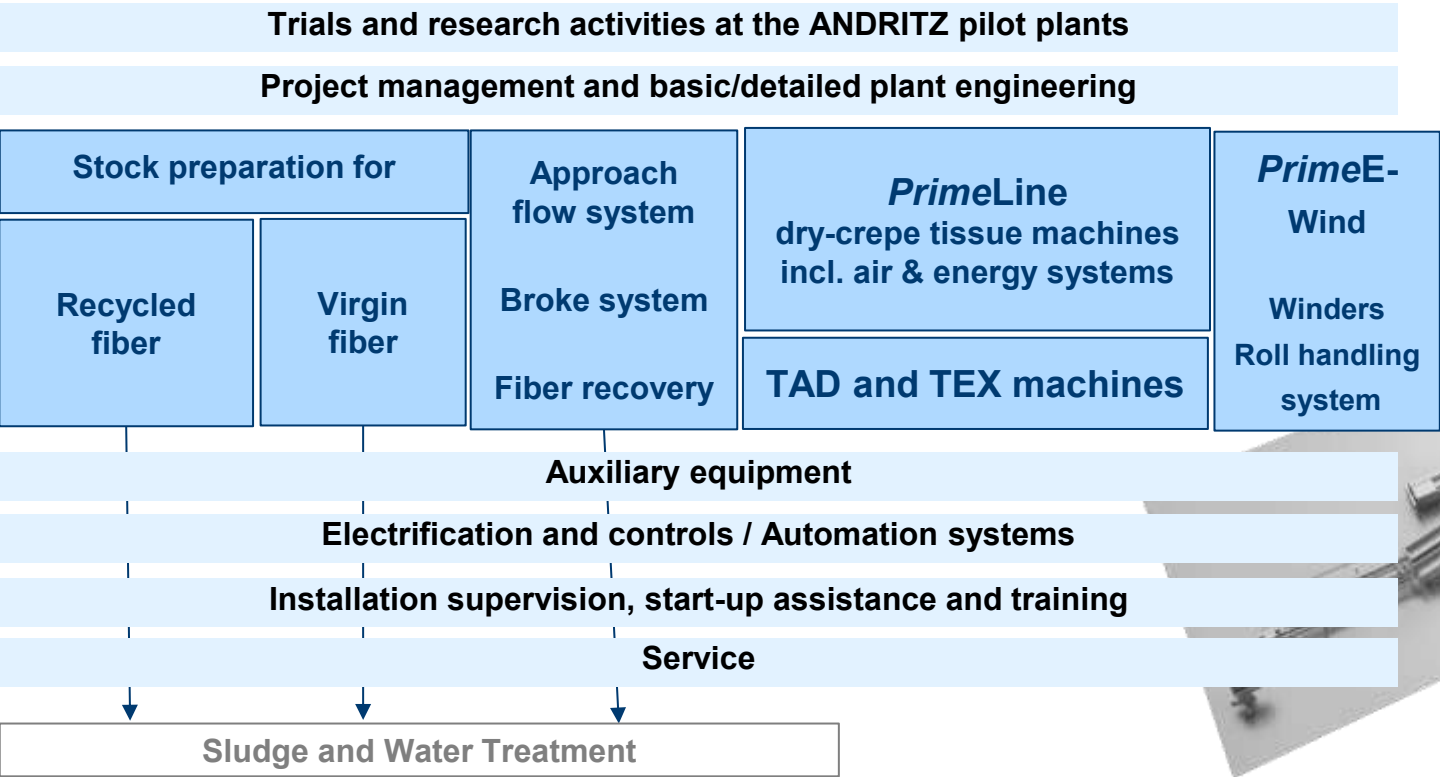
# 02

## FULL LINE SOLUTION: FROM STOCK PREPARATION TO FINISHED PAPER ROLLS

# PrimeLine TISSUE MACHINES COMPLETE LINES



From stock preparation to finished rolls, pumps and automation







# 02-1

**UP TO 15% LONG FIBER  
SAVING IN RATIO WITH  
ANDRITZ *PRIMEREFINE* HC T**

# BENEFITS YOU CAN ACHIEVE BY USING ANDRITZ PRIMEREFINE HC T



## **Significantly long fiber saving up to 15%:**

Lower costs, especially when there is big price difference between the long fiber and short fiber (~140 USD/t or more), even the power consumption are reasonable higher than low consistency refining, but finally the total cost still can be decreased a lot (fiber savings more than the increased cost of power)



## **Uncompromised paper properties:**

Maintain the strength, softness, and hand feel of the final product.



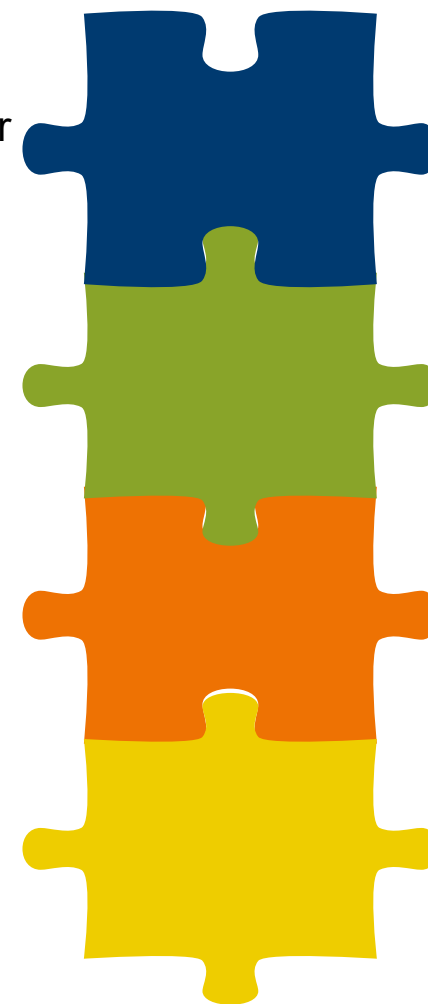
## **Stable operation and consistent fiber properties:**

Equipped with an automatic hydraulic numeric gap control system, separated from the oil lubrication system.



## **Lower maintenance cost:**

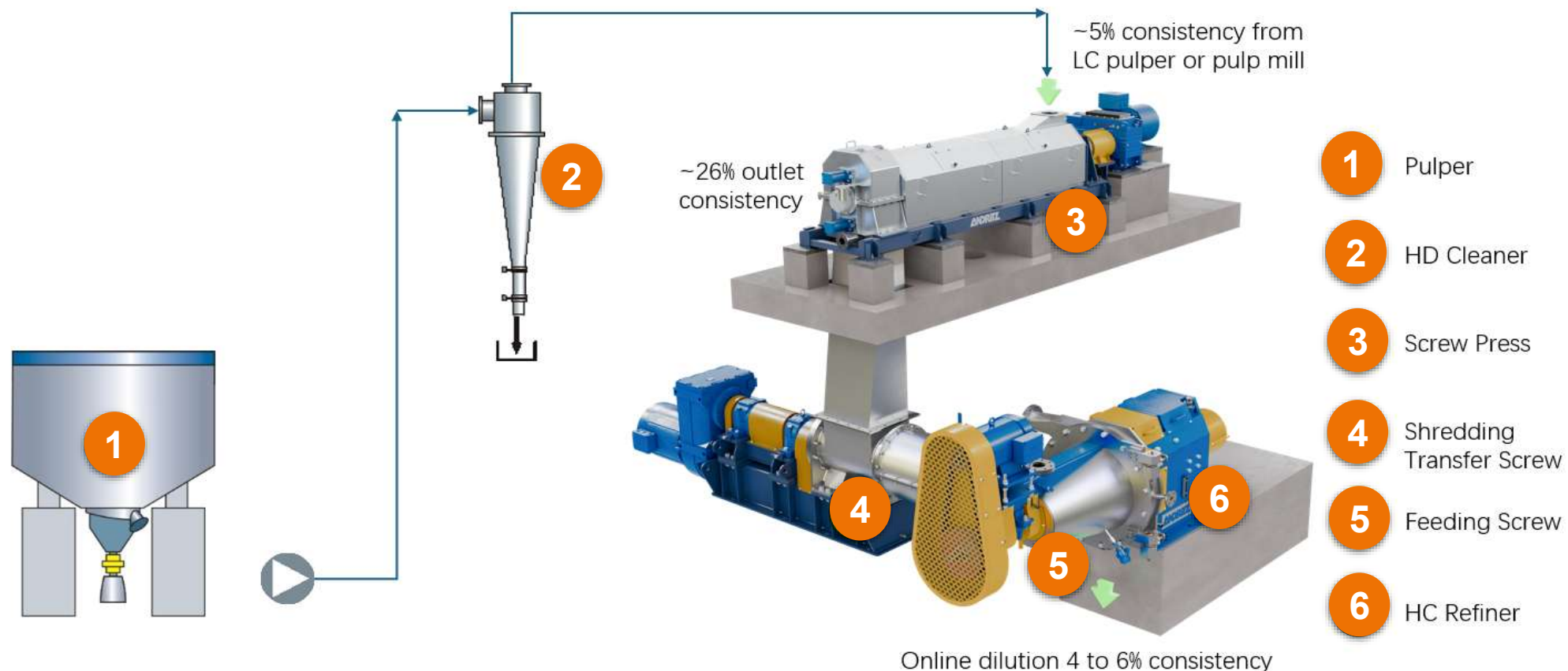
Longer life cycles of plates, rotors, and screen basket, significantly reducing maintenance cost



# WHAT IS ANDRITZ HIGH CONSISTENCY REFINING *PRIMEREFINE HC T* SYSTEM



By dewatering the LBKP pulp from ~5% consistency to about 26%, then feed to the high consistency refiner, after that online dilution to about 4 to 6% consistency in the refiner housing then discharge .

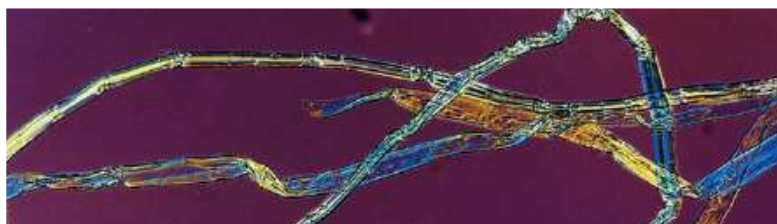


# LONG FIBER SAVINGS BY *PRIMEREFINE* HC T

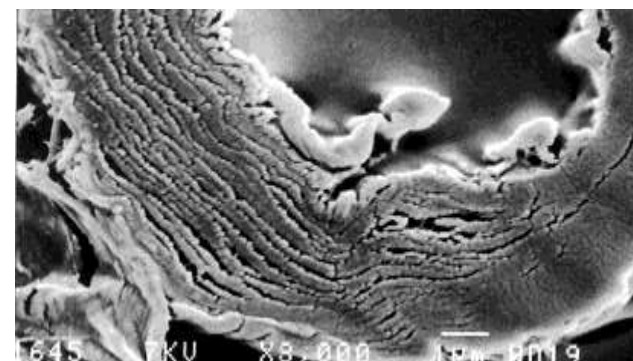


Due to high consistency refining concept, frictions are the main forces between fiber and fiber/fillings during refining, thus improves fiber:

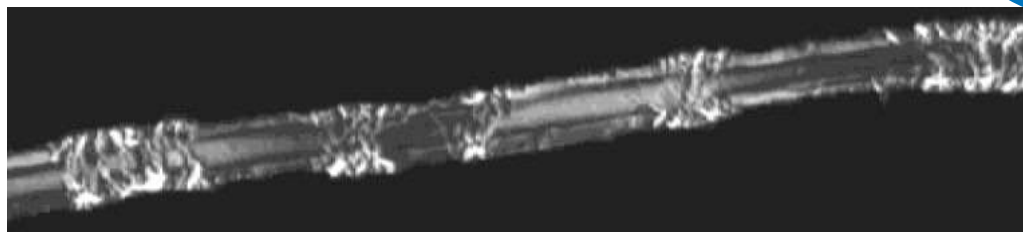
- Fibers become Kink and curl, or micro-compression, easily mechanical-interlocked with each other in a 3D sheet model, better tensile strength, meanwhile the bulk or porosity properties can be maintained.



- Internal fibrillation increased flexibility



- Micro-compression



LONG FIBER  
SAVINGS!!

- HC refining develop the strength properties of Short fiber in a way that bulk properties still keep similar, or not decrease so much compared with LC refining, thus long fiber can be saved.



# UNCOMPROMISED PAPER PROPERTIES



How *PrimeRefine* HC T high consistency refining system ensure paper quality?

## Fiber property LC VS HC refining

Refiner mode	LC	HC	Changes
Consistency ( %)		23	
Beating degree (°SR)	25	25	
Tensile index (N.m/g)	20.1	22.7	+12.9%
Burst index (kpa.m²/g)	1.24	1.4	+12%
Bulk (cm³/g)	3.29	3.35	+1.8%
Kink&curl	2.31	2.60	+12.5%
Fines (%)	8.3	7.5	-0.96%
Fibrillation (%)	0.69	1.54	+123.1%

- 1) External fibrillation also, due to friction → increase the hydrogen bonding area → better strength
- 2) fibers becoming more flexible due to internal fiber structure modification and external fibrillation → better hand feeling.
- 3) With same 25°SR sample, Lab testing shows that tensile index from HC refiner are 12.9% higher than from LC sample.

# PRIMEREFINE HC T LATEST REFERENCE

Confidential customer, Vietnam

Country: Vietnam

Start-up: 2024



## SCOPE:

Stock preparation system with HC refining for short fiber treatment, paper machine approach system, *PrimeLineCOMPACT S 1300* tissue machine with *PrimeDry Steel Yankee*, fabrics and rolls, a tailored automation system and distributed control systems



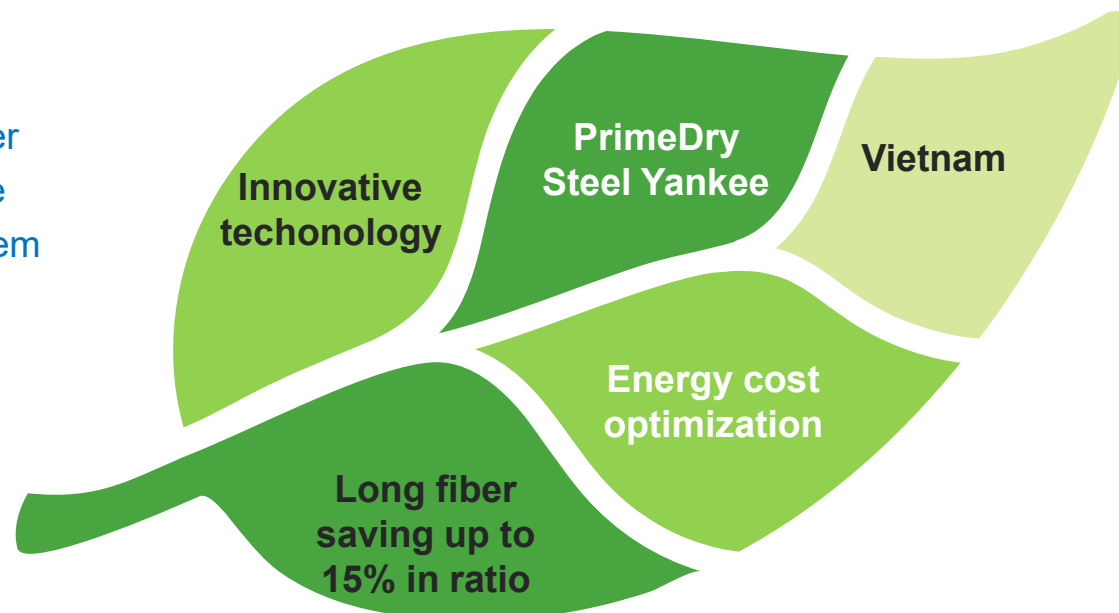
## RESULT:

- Long fiber saving up to 15% for low basis weight facial production
- Steel Yankee for energy-efficient drying and safe operation due to the elasticity of steel

Total



sold since 2019







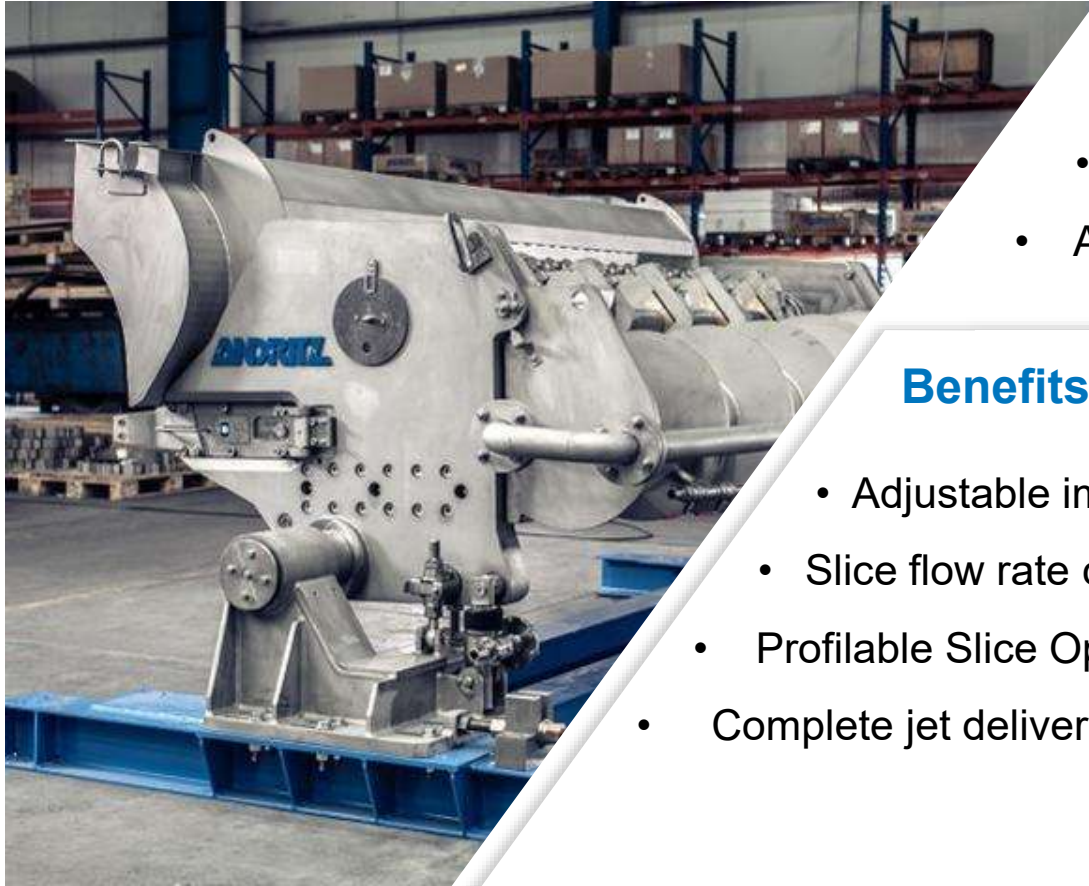
# 02-2

## SUSTAINABLE TISSUE MACHINE TECHNOLOGY FOR PREMIUM QUALITY



# KEY COMPONENTS

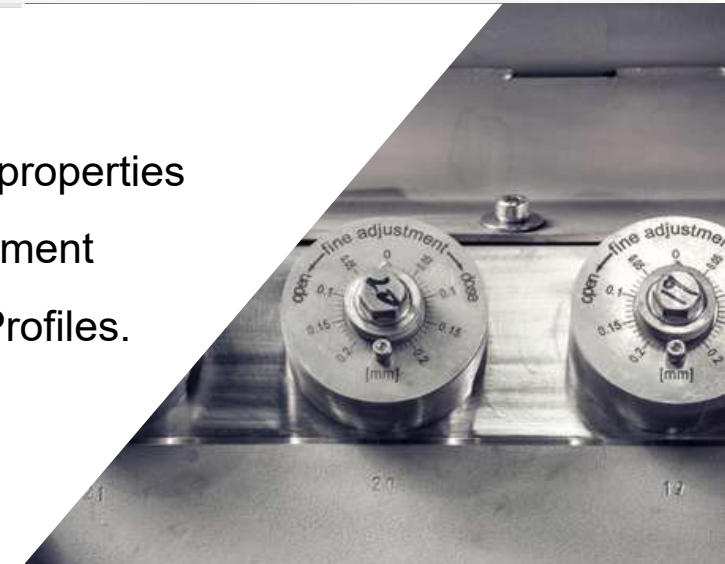
## *PrimeFlow* HEADBOX



- Excentric shaft slice opening adjustment
- Centrally located pivot for free-jet impingement adjustment
- Precision slice profiling spindles
- All adjustments available on the run.

### Benefits and Values

- Adjustable impingement angle to finely tune properties
- Slice flow rate control with fully protected equipment
- Profilable Slice Opening maintains excellent CD Profiles.
- Complete jet delivery control with no downtime.

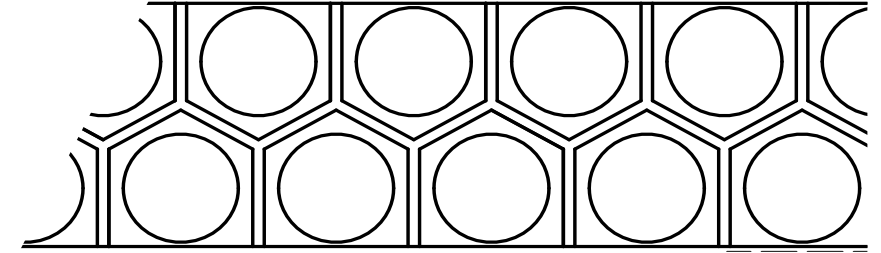


# KEY COMPONENTS

## *PrimeFlow* HEADBOX



- Turbulence Generator with nested polygon tubes
- High open area and overlap prevents streakiness
- Stable, smooth jet flow delivery
- Angle adjustment on-the-run to optimise product quality



### Benefits and Values

- Minimal swirl flows, unwanted turbulence, or streakiness
- Excellent inherent CD uniformity
- Superior Formation result
- Low pressure loss for high energy savings



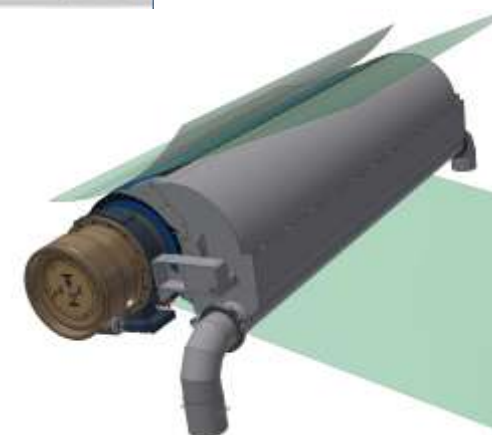
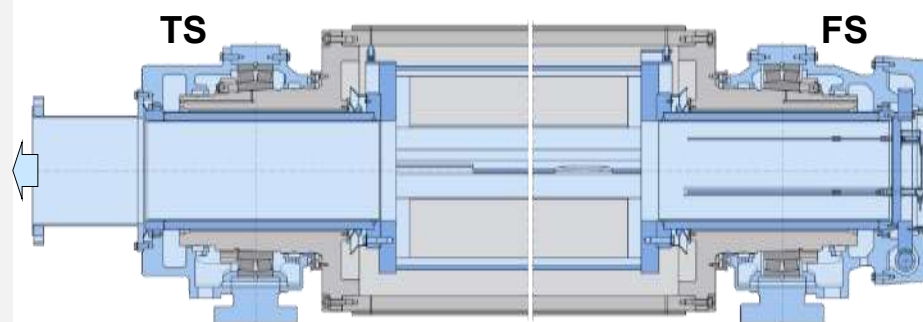
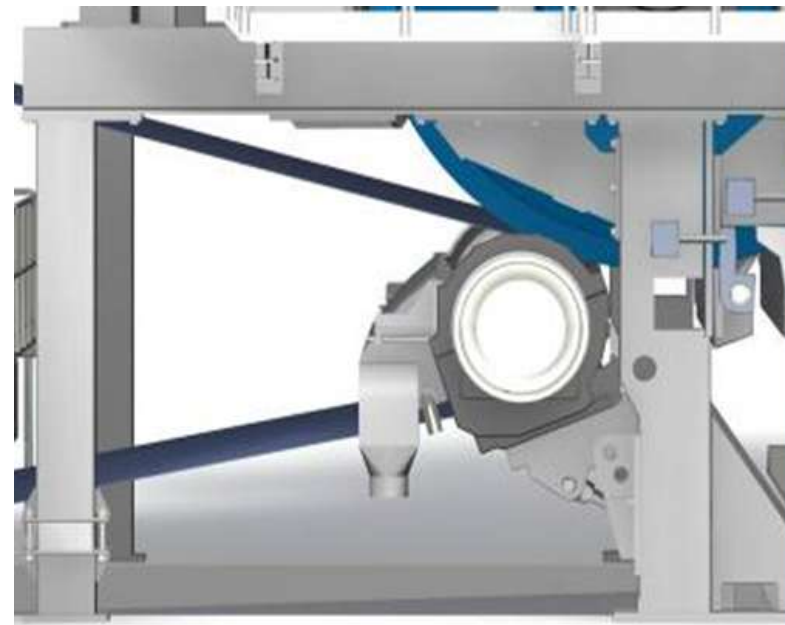


# KEY COMPONENTS

## *PrimePress* Single Press



- Duplex stainless, high quality shell  
Imported from EU or USA
- PU covered by ANDRITZ  
Stonewood
- Vacuum suction on drive side to  
make the felt and roll change easy
- No drive applied to the suction  
pressure roll
- High line load – 110 kN/m
- Big diameter -  $\varnothing$  1410 mm



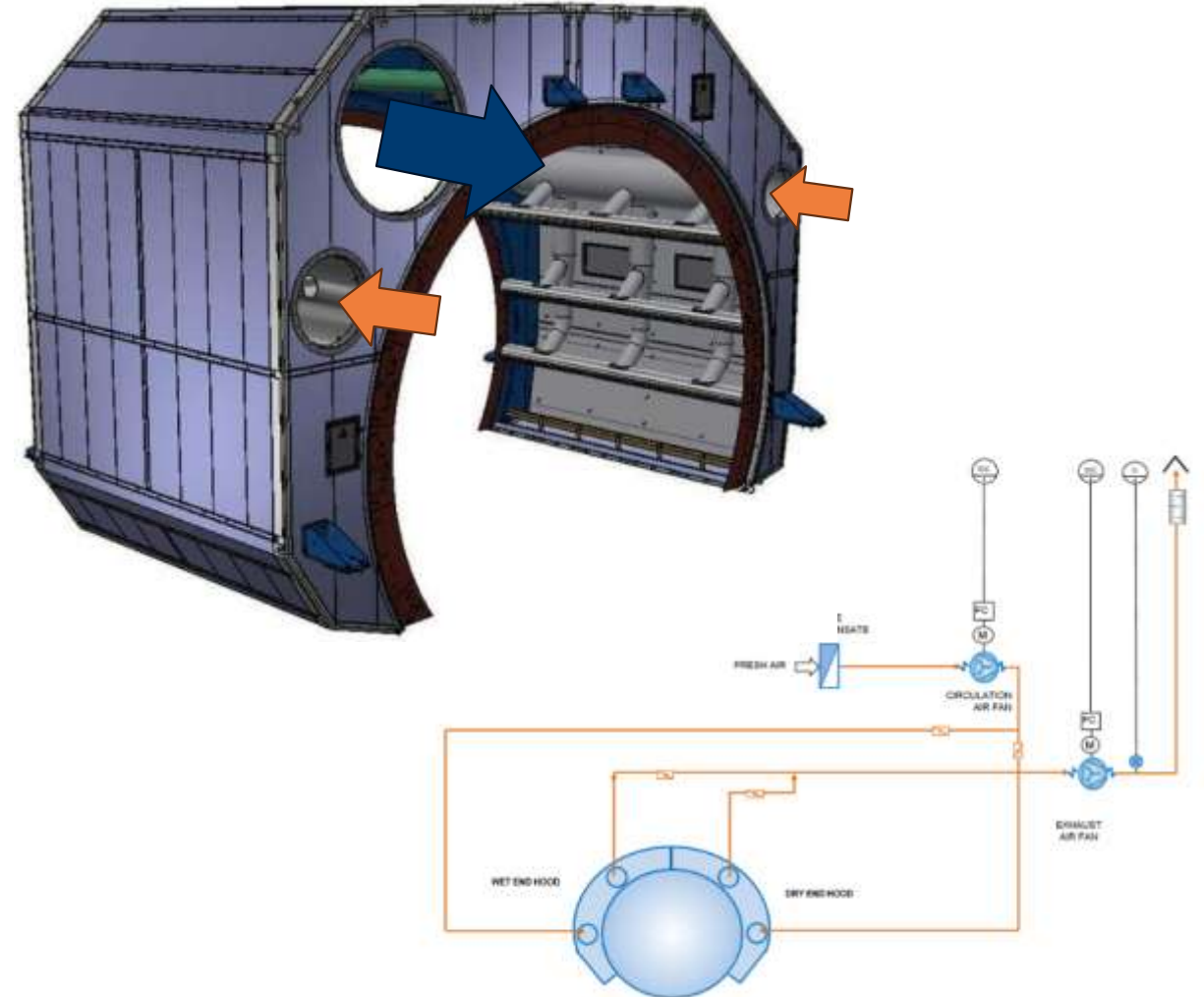
# KEY COMPONENTS

## *Prime*CANOPY Hood



### Design principle

- The paper is dried completely by the contact drying -- Yankee cylinder, which improves the drying efficiency and reduces the energy consumption
  - Only a small amount of air to the hood is heated by the condensate to prevent water dripping
- Recent projects: Hengan, C&S, YFY





# PrimeLine TISSUE MACHINES

## Selected Latest References



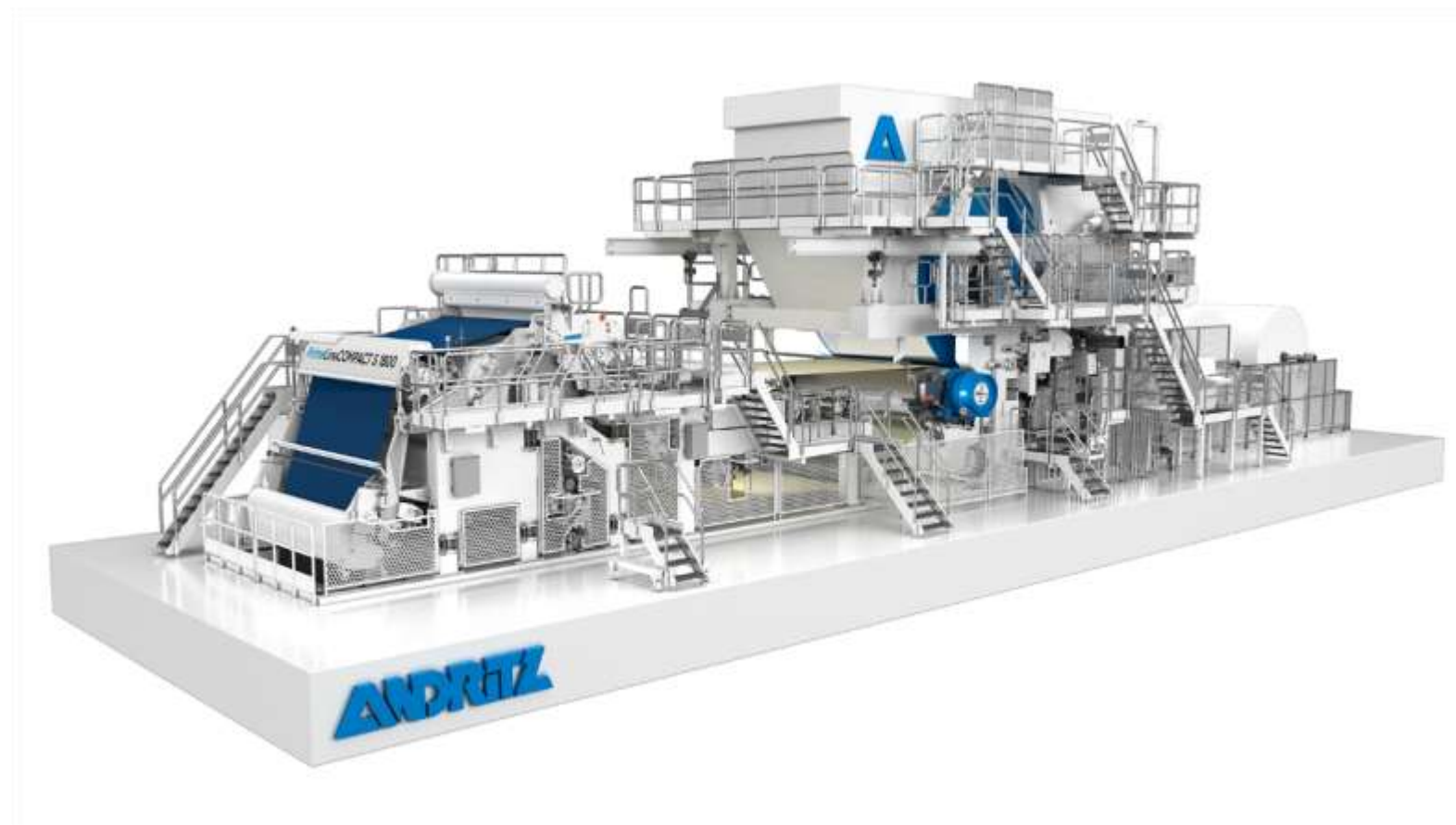
Hengan Group

China

2 TM 3.65 m width

Start-ups: 2022

Design speed	1,650 m/min
Working width	3.65 m
Steel Yankee	18 ft.
Additional highlight	Big diameter of SPR Canopy Hood





# 02-3

## FROM JUMBO TO FINISHED ROLL

# ANDRITZ STRENGTHENS ITS POSITION IN THE TISSUE AND PAPER INDUSTRY BY ACQUIRING A.CELLI PAPER IN 2025



## A.CELLI PAPER

Founded in 1944, A.Celli Paper is a company specializing in the design and production of technological solutions for tissue and paper offering complete plants, revamping, key components and automation software. In addition to its headquarters in Tassignano (Lucca, Italy), it develops with additional offices in Pinerolo (Turin, Italy) and Shanghai (China) being recognized worldwide for the innovation and flexibility of its solutions.





# PrimeE-Wind

## PRODUCT OVERVIEW & KEY FEATURES

### Product Series:

E-WIND® T80S, T90, T100, T100S, T200, T200S

- Web width up to 5600 mm
- Max speed up to 1900 m/min

### Technical Highlights:

- **High bulk preservation:** tension control, rider roll & chuck adjustment for optimal tissue thickness and bulk
- **Smart automation:** Industry 4.0, IoT, AI integration for data analysis, remote monitoring, predictive maintenance, and defect recognition
- **Safety & maintenance:** comprehensive protection (fences, interlocks, light curtains, fail-safe PLC), knife life management, pre-assembly & pre-testing, on-site supervision

### Process Flow:

Unwinding, slitting, winding, roll handling, core handling,  
dust removal, trim removal, safety, control & automation, maintenance & service



### Unwinding & Slitting:

- Multiple unwinder designs (double or triple belt arm, shafted/shaftless)
- Slitting system supports automatic/semi-automatic positioning
- High-durability knives for longer life and lower maintenance cost

### Winding & Roll Handling:

- Large diameter winding drums (standard 750 mm) for reduced pressure and vibration, improved bulk retention
- Automatic core loading, external/internal loop winding shaft management for various widths and weights

### Dust Removal & Trim Handling:

- Efficient dust extraction and trim recycling for better environment and resource utilization

### Smart Automation & Safety:

- Standard and advanced packages: setup, diagnostics, reporting, energy management, asset management, remote service
- Full safety protection for personnel and equipment



# PrimeE-Wind REFERENCE LIST 2020-2025 APAC REGION



Year	Customer	Country	Model	Grade	Finish reel diam. (mm)	Web width (mm)	Design speed (m/min)	Type Shafted/Shaftless
2024	Gulf Paper Manufacturing	Kuwait	E-WIND T80S with calender and 3 unwind stands	Tissue	1500	2280	1100	Shaftless
2023	Xuan Mai Paper	Vietnam	E-WIND T100 with calender and 3 unwind stands	Tissue	1800	2850	1900	Shafted
2023	Asia Symbol - Rizhao TM31-TM34 (RW3)	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2000	5650	1100	Shaftless
2023	Asia Symbol - Rizhao TM31-TM34 (RW2)	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2000	5650	1100	Shaftless
2023	Asia Symbol - Rizhao TM31-TM34 (RW1)	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2000	5650	1100	Shaftless
2022	Asia Symbol - Jangmen TM11	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2000	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM3-TM4 (RW3)	China	E-WIND T200S with 3 unwind stands	Tissue	2200	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM3-TM4 (RW1)	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2200	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM3-TM4 (RW2)	China	E-WIND T200S with 4 unwind stands	Tissue	2200	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM1-TM2 (RW1)	China	E-WIND T200S with 3 unwind stands	Tissue	2200	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM1-TM2 (RW3)	China	E-WIND T200S with 4 unwind stands	Tissue	2200	5650	1100	Shaftless
2021	Liansheng Pulp & Paper - TM1-TM2 (RW2)	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2200	5650	1100	Shaftless
2020	Sun Paper - Guagxi (Beihai) - TM6/1	China	E-WIND T200 with calender and 5 unwind stands	Tissue	2500	5650	1800	Shafted
2020	Sun Paper - Guagxi (Beihai) - TM6/2	China	E-WIND T200S with 3 unwind stands	Tissue	2500	5650	1000	Shaftless
2020	Sun Paper - Guagxi (Beihai) - TM5	China	E-WIND T200S with calender and 4 unwind stands	Tissue	2500	5650	1000	Shaftless
2020	Aktül Kağıt	Turkey	E-WIND T80S with 2 unwind stands	Tissue	1500	2850	1000	Shaftless



# EMPOWERING TISSUE PRODUCERS WITH ANDRITZ FULL-LINE SOLUTIONS

## BENEFITS

**PrimeRefine HC T** high consistency refining for tissue  
Saving long fiber ratio up to 15% with uncompromised tissue quality

### PrimeLine™ M1600

**PrimeFlow headbox**  
Ensure excellent final product quality with Lower pressure loss and higher energy savings

**PrimePress single press**  
Outstanding pressing result with lower investment cost

**PrimeCANOPY Hood**  
Improves drying efficiency and reduces energy consumption

### PrimeE-Wind

- High bulk preservation
- Smart automation
- High safety standard & easy maintenance



**Quality  
Profitability  
Sustainability**





**ANDRITZ.  
FOR GROWTH  
THAT MATTERS.**

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