SUCCESS STORY

Complete resource-saving tissue production line connected to the Metris Performance Center

PULP & PAPER

VAJDA PAPÍR

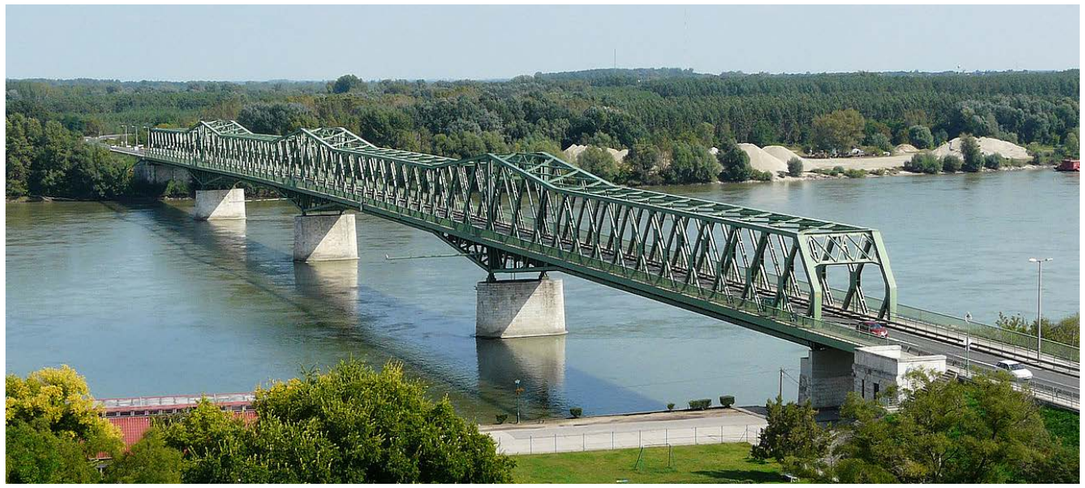
TM1, HUNGARY

ANDRITZ

ENGINEERED SUCCESS

Gathering impressions – Dunaföldvár

Dunaföldvár is located in Tolna County in Central Hungary, on the west bank of the River Danube.



József Beszédes Bridge in Dunaföldvár, © Vadas Róbert

The landscape of Tolna County is very flat and the area is rich in fertile soil. Its economy is agriculture-based, with grains, sunflowers, and fodder plants being the major crops. Cattle and pigs are also raised.

Industry in Tolna was underdeveloped until the 1960s, but the planned industrialization of the 1970s led Budapest-based companies to open branches in the county's cities and towns. Starting in the mid-1970s, the Hungarian state made several large investments – the most significant of which was the nuclear power plant in Paks, which opened in 1976, had four reactors by the mid-1980s, and remains Hungary's only nuclear power facility.

The Dunaföldvár Bridge (built 1928–32) is the only bridge over the Budapest-Baja section of the Danube and is of great importance. A huge biorefinery in Dunaföldvár uses feed-grade corn to produce animal feed, bioethanol, and corn oil.

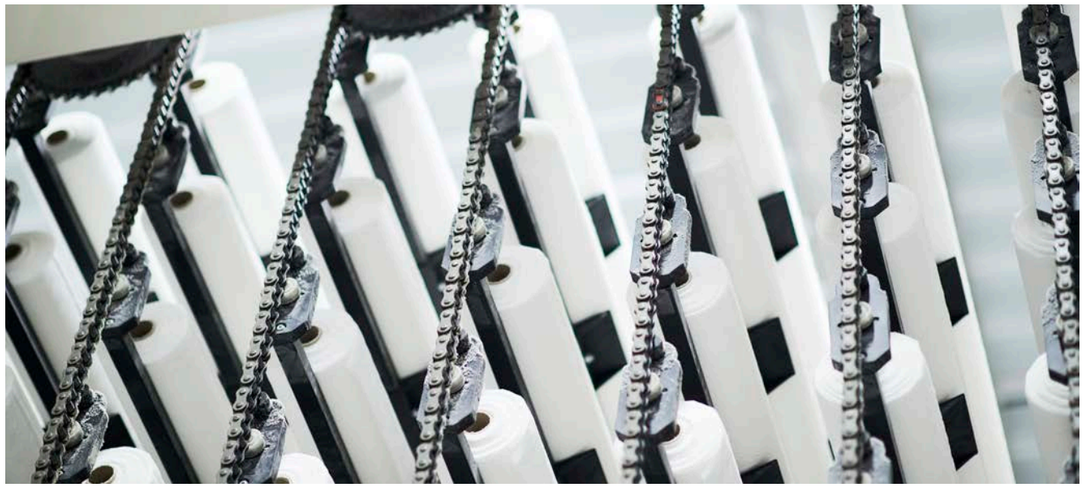
DUNAFÖLDVÁR – KEY FACTS:

- Inhabitants: approx. 9,320
- Size: 111.42 km²
- Main industries:
  Animal feed, bioethanol, corn oil, and paper production

The Turkish tower (Csonka-torony), © Vadas Róbert

Vajda Papír – a dynamic player in the tissue business

The 100% Hungarian-owned private company operates tissue production mills in Hungary and Norway and covers a wide tissue product range.



Vajda Papír started as a converting company about twenty years ago.

Vajda Papír is one of Europe's most dynamically expanding tissue producers. The 100% Hungarian-owned private company operates tissue production mills in Hungary and Norway and covers a wide tissue product range. During its history covering almost two decades, the company has also won several regional and national awards for its business and product quality and focuses strongly on environmentally friendly tissue production.

The mill at Dunaföldvár

VAJDA PAPÍR IN BRIEF

Locations	Budapest, Hungary (headquarters) Dunaföldvár, Hungary Drammen, Norway
Products	Finished consumer goods: toilet paper, tissue, towels, napkins Industrial goods: toilet paper, paper towel
Brands	Ooops!, Sindy, Star Duo, Lilla
Key markets	Hungary and Eastern Europe, Scandinavia, and the Baltic states
Total capacity	140.000 t/y

“We like challenges very much! We were a classic converting company for almost twenty years. When the volumes started to grow, we built up a greenfield production site. We have chosen state-of-the-art equipment for our converting operations, so our tissue machine supplier had to be the most innovative, most environmentally friendly, and the most cost-efficient, with single USPs. That is why we selected ANDRITZ.”

Attila Vajda
Managing Director
Vajda Papír

It all started in a rented garage

When you talk about companies that started up in a garage and were later extremely successful, you can’t help thinking about Microsoft, Apple, and co. But there are also many captains of industry outside the internet economy who have worked their way up from modest beginnings with courage and far-sightedness. And you don’t necessarily have to travel as far as Silicon Valley to find them. A visit to Hungary is worth it too.

1999
It all started in 1999 when Attila Vajda and Szilvia Vajda Csata bought their first tissue machinery to produce toilet paper, and installed it in a garage that they had rented. The partners entered the market with a single product that was surprisingly well received, and in order to meet the increasing demand, they started investing in new machinery.

2001
Back in 2001, the founders gave up all their other activities in order to concentrate fully on development of the company. They purchased a high-capacity line suitable for the production of paper towels and toilet tissue, and the product range started expanding rapidly. The same year – as soon as the first opportunity arose – the company entered the international market.

2004
In addition to the modernization of existing equipment, new machines with high capacity were also added. Capacities multiplied, while the assortment expanded to include a full range of household paper products.

2008
The time had come for extensive rebuild and restructuring measures. The production units that were scattered across the plant were brought together in one place. The plant buildings were largely renovated, the foundations were laid for the advanced waste-to-energy plant, the heating and energy systems for the machinery were renewed, and the entire power supply was replaced with an environmentally friendly system.

2011
This was the year when the first office abroad was opened. There was also major restructuring at the company in Hungary. The team now includes more sales representatives, and the company has set up an independent management board, which means that five executives have joined the company’s top management.

2013
Vajda Papír Scandinavia, a subsidiary established to increase the production capacity of the company that was now becoming international, was set up in May. The company founded in Norway employs 100 people and has a production and processing capacity of 25 thousand tons.

2014
In June, the major new 1.8 billion HUF investment project was approved in order to increase the production capacity of Vajda Papír and invest in greenfield project for tissue production. The new mill covers 23,000 m^2 and has been erected on an area of 81,000 m^2 at Dunaföldvár.

Full storage of high-quality tissue at Vajda Papír.

A greenfield project: tissue production at Dunaföldvár

Today, Vajda Papír is one of Europe's most dynamically expanding tissue producers. ANDRITZ has accompanied this history of growth as a technology supplier and system partner.

2018 - A NEW DIMENSION
Within 15 months, a complete paper production line was delivered, installed, and started up by the end of 2018. A new Vajda Papír location was established, with a workforce of 130. The new production line brings Vajda Papír to a new dimension: from Hungary's leading converting company to Hungary's biggest and most modern integrated tissue paper production site.

2020 - FULL-STEAM OPERATION
On an area of 26,000 square meters, around 30,000 tons of sanitary paper are produced every year in Dunaföldvár, and not just for consumers. By systematically extending the value chain and expanding production to include extra-strong and highly absorbent paper, Vajda Papir tapped into new target groups: hotels, restaurants, and cafes. "We were well aware that we needed a specific paper quality for these customers that we could not purchase on the market in sufficient quantities," says Attila Vajda. "The obvious thing to do was to begin producing paper here locally – paper of very high quality."

Vajda Papir found the right partner for this in ANDRITZ: The company designed and supplied the complete tissue production line, provided comprehensive support during start-up and, thanks not least to digital solutions, is always available for advice and troubleshooting during operations. "We deliberately sought out a lean overall package that is state-of-the-art. The line provides the right response to our needs and those of our customers," says Attila Vajda. "We are particularly pleased with its efficiency, paper quality, and comparatively low energy consumption."

From the ANDRITZ point of view, the project was extraordinarily broad, covering the entire engineering work: It began with basic planning and went on to include energy distribution, control systems, and automation technology.

"We found the perfect partner in ANDRITZ: They have provided great support during all of the project phases – thanks not least to digital tools."

Péter Szabó
Mill Manager
Vajda Papír

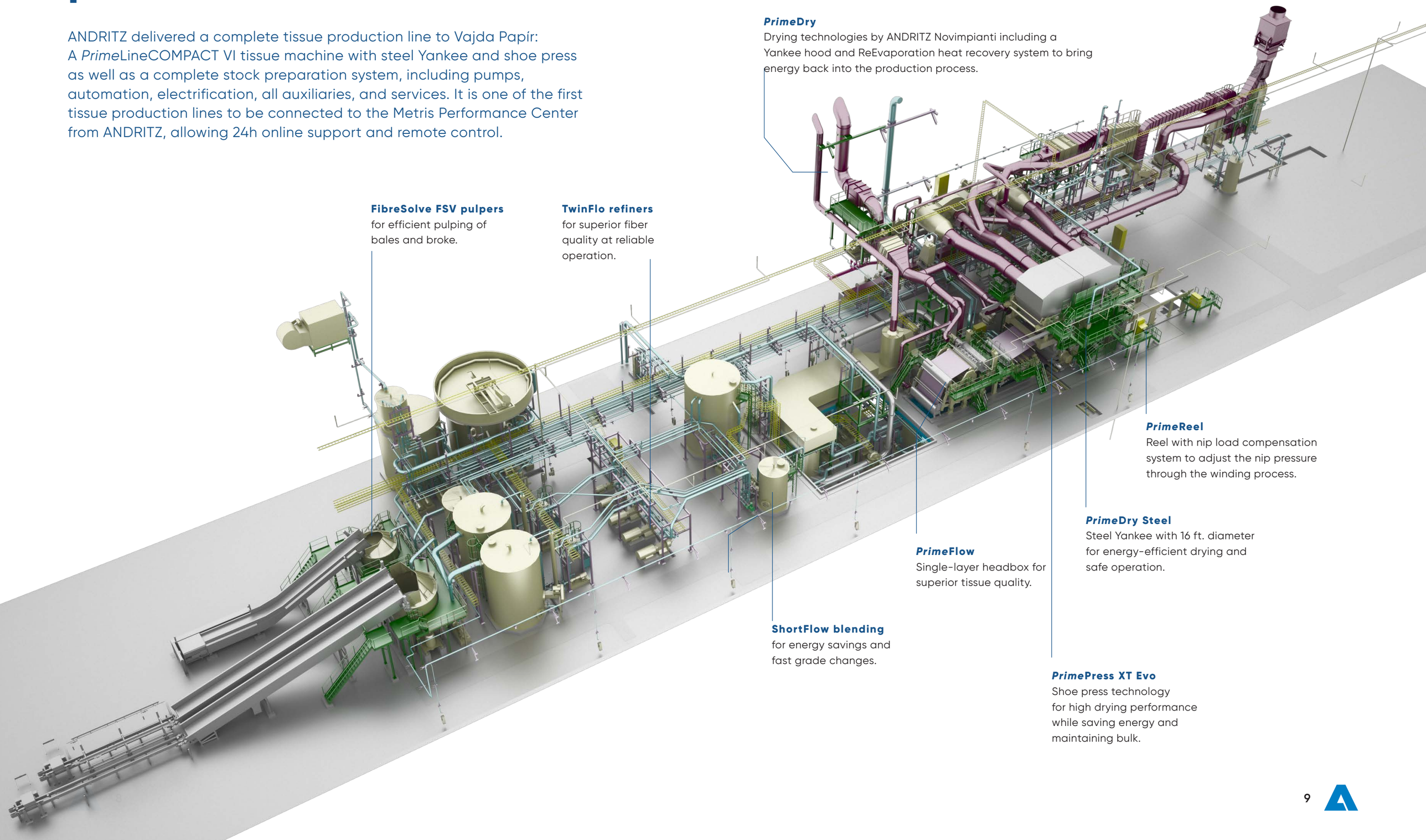
"We like challenges – complex undertakings, particularly in Europe, which are exactly in line with our capabilities and thus of great interest to us."

Tine Kocbek
Project Manager Tissue
ANDRITZ

A STRONG PARTNER / Close cooperation and know-how exchange

The ANDRITZ tissue production line

ANDRITZ delivered a complete tissue production line to Vajda Papír: A *Prime*LineCOMPACT VI tissue machine with steel Yankee and shoe press as well as a complete stock preparation system, including pumps, automation, electrification, all auxiliaries, and services. It is one of the first tissue production lines to be connected to the Metris Performance Center from ANDRITZ, allowing 24h online support and remote control.



***Prime*Dry**
Drying technologies by ANDRITZ Novimpianti including a Yankee hood and ReEvaporation heat recovery system to bring energy back into the production process.

FibreSolve FSV pulpers
for efficient pulping of bales and broke.

TwinFlo refiners
for superior fiber quality at reliable operation.

***Prime*Reel**
Reel with nip load compensation system to adjust the nip pressure through the winding process.

***Prime*Dry Steel**
Steel Yankee with 16 ft. diameter for energy-efficient drying and safe operation.

***Prime*Flow**
Single-layer headbox for superior tissue quality.

ShortFlow blending
for energy savings and fast grade changes.

***Prime*Press XT Evo**
Shoe press technology for high drying performance while saving energy and maintaining bulk.

STOCK PREPARATION

Efficient mixing of stock components in the Short Flow blending system

STOCK PREPARATION / ANDRITZ TwinFlo refiners and FibreSolve FSV pulpers

Stock preparation

Superior fiber processing means the ability to achieve excellent fiber quality with economical use of resources. With this demand in mind, ANDRITZ installed a complete stock preparation line including the approach flow, fiber recovery, and broke handling systems.

The stock preparation system processes virgin fibers as raw material. It has two separate lines (short/long fibers) so that the fibers can develop to best advantage.

The system features the following highlights:

PULPING

The outstanding design of the ANDRITZ FibreSolve FSV pulper rotor and extraction chamber allows gentle fiber treatment and low power consumption. With its special mixing vanes, the FibreSolve FSV creates extraordinarily good circulation within the pulper vat. The cleaning vanes keep the screen plate clean, and the fibers are fully disintegrated without being damaged.

REFINING

The ANDRITZ TwinFlo is a double-disc refiner capable of refining all types of fibers in parallel, achieving superior fiber quality. The proven machine design enables reliable operation while fast plate changes contribute to short downtimes and low maintenance effort. Thanks to the spline shaft technology, the TwinFlo features a consistent refining gap, which allows a balanced energy transfer in both refining zones.

SHORTFLOW BLENDING SYSTEM

The individual stock components are mixed in one ShortFlow blending system comprising a mixing pipe and a mixing chest. Thanks to the special design of the mixing pipe and to the control philosophy, only a small blend tank is required per line but not a separate machine tank. Thus, ShortFlow blending enables reduced chest volumes in the approach flow as well as energy savings and fast grade changes.

DOUBLE DILUTION APPROACH FLOW SYSTEM

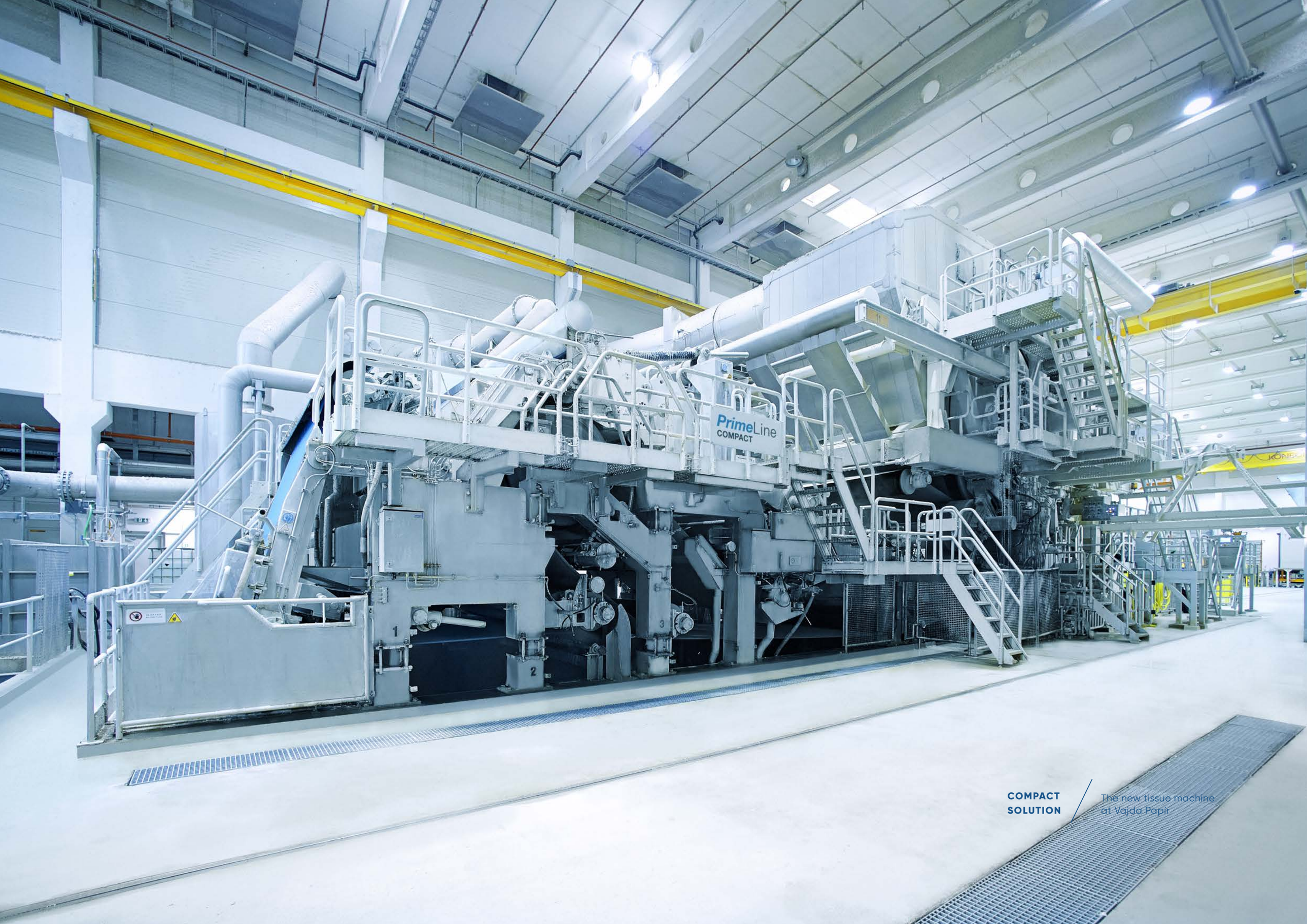
The fiber suspension is diluted right before and again after the ModuScreen HB headbox screen. This double-dilution system enables significant energy savings thanks to screening at higher consistency.

KEY COMPONENTS IN STOCK PREPARATION

- FibreSolve FSV pulpers for slushing of pulp bales and broke
- ModuScreen CP protection screens
- Deflakers
- TwinFlo refiners for short and long fibers
- ShortFlow blending system
- ModuScreen HB headbox screen
- ModuScreen F broke screen
- Fibre Solve FSU under-machine pulper

“The ShortFlow blending system, in particular, allows Vajda Papir to achieve the fast grade changes they are aiming at.“

Andreas Gorton-Hülgerth
Global Director of Technology
Stock Preparation and Recycling Fiber Systems
ANDRITZ



COMPACT SOLUTION

The new tissue machine at Vajda Papír

*Prime*LineCOMPACT tissue machine

The configuration of the *Prime*LineCOMPACT tissue machine allows flexible production of tissue qualities with high softness and high bulk.

HEADBOX

The *Prime*Flow headbox has a single-layer design. The step diffusor turbulence generator is constructed of tube bundles with inserts for optimal formation over a wide range of headbox flow rates and consistencies. In combination with the optimized nozzle geometry, this gives superior paper quality.

FORMER

The *Prime*Form CrescentFormer has a compact design with high dewatering capacity. The white water flow out of the former is controlled by specially arranged guide vanes, and the high energy within the jet is not broken down until it reaches a calming cyclone outside the tissue machine. This generates less mist inside the machine, thus minimizing disruptions. These measures in combination with specially located screens keep the machine area clean, providing an operator-friendly environment with good accessibility and cleanliness. The frame is stainless steel clad and can be fully cantilevered for fast and easy wire changes.

PRESS

The *Prime*Press XT Evo shoe press ensures both improved dewatering and better product quality, thus reducing the need for thermal drying. As a result, the energy demand of the tissue machine with shoe press is substantially lower. More information on the shoe press is available in the following pages.

YANKEE

The drying section is equipped with a *Prime*Dry Steel Yankee (16 ft. diameter) for efficient drying and safe operation. Due to the ductile properties of steel, the Yankees can withstand much higher loads than cast iron models. From the safety point of view, the advantage of steel Yankees is that they can absorb considerably more strain before there is any risk of fracture. Due to the brittleness of cast iron Yankees, they rupture immediately if there is a small crack. On the other hand, steel has very high elasticity, which means that cracks grow slowly and can be detected during inspections. Hence, the Yankee can be repaired and there is no risk of exploding. In addition, the thermo-physical properties of steel are much better than those of cast iron and they improve drying performance. Due to the stable and uniform heat profile of steel Yankees, their lifetime is longer than that of cast iron models. Finally, steel Yankees have beneficial operating properties that lead to better final results and savings for tissue producers.

With diameters of up to 26 ft. and shell lengths up to 7.4 m, ANDRITZ is the technology leader for large steel Yankees. Of the 70+ steel Yankees already sold, more than 30 are in the large size range (> 18 ft. diam. and > 6 m shell length), amongst them the world's largest steel Yankee in operation for tissue.

"The shoe press in combination with the steel Yankee enables energy savings of up to 20%. The re-evaporation system enables additional energy savings by up to 10%"

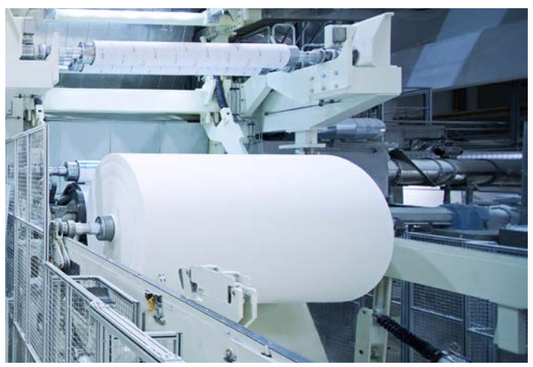
Paul Richards
Senior Technology Manager Tissue
ANDRITZ

"The main benefits of the ANDRITZ tissue machine are definitely the shoe press for high softness, the re-evaporation system for energy savings, and the steel Yankee for efficient drying."

Martin Schratter
Production Manager
Vajda Papír

RE-EVAPORATION HEAT RECOVERY

To reduce drying energy costs, "waste heat" in the hood exhaust can be used to recover steam from the condensate stream, thereby reducing the amount of "fresh" steam required. Depending on the drying process, the exhaust air temperature can be up to 400 °C, with a moisture content of up to 0.6 kg H_2O/kg dry air. The *Prime*Dry ReEvaporation Heat Recovery concept delivers a large part of the energy back into the tissue producing process by using waste heat to evaporate condensate. This condensate goes back as steam to the Yankee. Up to 30% of the steam demand for the drying process can be generated from the waste heat using this *Prime*Dry solution, depending on the hot air system design and the location of the ReEvaporation heat recovery unit in the hood exhaust air flow.



REEL

The secondary arm of the *Prime*Reel is equipped with a nip load compensation system to adjust the nip pressure through the winding process. A reel spool magazine is installed to store the reel spools and feed them to the reel via the reel spool lift, ensuring efficient and automated operation.

MACHINE DESIGN

Annual capacity	35,000 t
Design speed	2,100 m/min
Working width	2.74 m
Yankee diameter	16 ft.
Products	High-quality facial wipes, napkins, toilet tissue, paper towels, and kitchen rolls: mainly 15.8–20 gsm

Press section of the tissue machine at Vajda Papír with *Prime*Press XT Evo shoe press.

*Prime*Press XT Evo shoe press

The application of a shoe press in tissue production is unique in that sheet is formed on a water-saturated felt (CrescentFormer concept). Careful sizing of the sheet pre-dewatering is required. The tissue is pressed against a Yankee, which is challenging because the Yankee is not a perfect counter-roll press member.

The ANDRITZ edge control system gives full control of the critical edge zones to the papermaker. In the edge area, the operator can control local line load and set the optimum press nip. And the unique and patented deflection compensation ensured by the U-shaped loading mechanism ensures a clear relation between pneumatic pressure and line load, resulting in uniform conditions in cross-machine direction.

Together with the flexible shoe design, the individual control of the edge zones enables:

- Compensation of edge issues
- Compensation of crown issues
- Setting of customized optimum press nip conditions at the edges

"Our shoe press dewaters the web gently, preserving the quality of the sheet, but still achieves a far higher post-press dryness than conventional presses."

Robert Meitner
Head of R&D
ANDRITZ Küsters

Due to the new energy-efficient press design, improved dewatering, and reduced need for thermal drying, the press achieves either significant savings in energy or a noticeable increase in capacity.

BENEFITS OF THE *Prime*Press XT Evo:

- High-quality and high-bulk tissue
- Individually controlled edge zones
- Improved dewatering, higher post-press dryness, and reduced need for thermal drying
- Lower energy consumption – lower operating costs compared to conventional presses

24/7 REMOTE SUPPPORT

Michael Auer from ANDRITZ in the Metris Performance Center

The future has already begun at Dunaföldvár

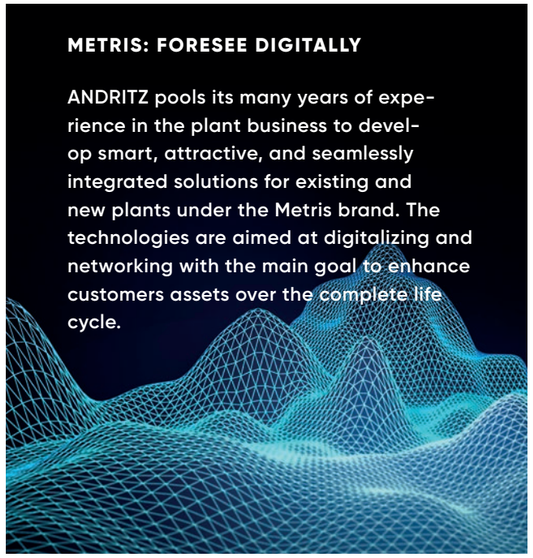
The tissue production line at Vajda Papír is connected to the Metris Performance Center to offer on-site as well as remote assistance services by ANDRITZ process specialists.

"It is one of the first tissue production lines from ANDRITZ that are connected to the Metris Performance Center in Graz to enable 24-hour online support and remote control," says Michael Auer, ANDRITZ Project Manager for Automation. This comprehensive and secure connectivity provides valuable support, especially in the start-up phase: The experts in the Performance Center can actively assist during start-up and ramping up of the plant by keeping an eye on all the main parameters and intervening in an advisory and controlling capacity – if necessary and requested by the customer. "This generally shortens the start-up period of a tissue line significantly from several weeks to just a few days," Michael Auer adds. In addition, the plant has been prepared for further optimization while in operation; the Metris Performance Center also helps out here remotely.

"Digitalization and artificial intelligence are very important in paper production," Attila Vajda also believes. They help operators and engineers to find the optimum plant settings speedily, circumvent problems, and plan predictive maintenance. "There is no alternative to comprehensive sensor technology, big data analysis, and the implementation of intelligent algorithms if you want to operate efficiently. In other words, the future has already begun at Dunaföldvár."

At the Dunaföldvár site, the ANDRITZ Automation scope of supply included the entire field instrumentation, detailed engineering, start-up, commissioning, and training for the complete equipment. The newly installed distributed control system is connected to the Metris server on site, which increases operator and maintenance efficiency, and enables the customer to achieve constant and highest product quality and reduce unscheduled production downtimes.

ANDRITZ uses its digital Metris UX platform to optimize the production processes as well as for operator troubleshooting and decision support.



METRIS: FORESEE DIGITALLY

ANDRITZ pools its many years of experience in the plant business to develop smart, attractive, and seamlessly integrated solutions for existing and new plants under the Metris brand. The technologies are aimed at digitalizing and networking with the main goal to enhance customers assets over the complete life cycle.

BENEFITS OF THE METRIS PERFORMANCE CENTER:

- Remote support for commissioning, start-up, production, and maintenance
- Know-how exchange for stable and economic process conditions in case of any process and equipment issues for all customers worldwide
- Optimization of Process Performance (OPP)
- Direct customer contact and fast response by online real-time sharing information, using the latest communication and augmented reality (AR) solutions
- Training center for workshops and trainee programs for internal/external employees i.e. special troubleshooting courses for operators and process engineers

A STRONG PLAYER

Exporting high-quality tissue to more than 20 countries

HIGH QUALITY

High-quality, high-bulk tissue of Vajda Papír

Extensively tested under operating conditions

At the ANDRITZ *Prime*LineTIAC - Tissue Innovation and Application Center - in Graz, Austria, Vajda Papír staff were able to see innovations like the shoe press in operation in advance.

With the *Prime*LineTIAC, ANDRITZ offers utmost flexibility to customers and other stakeholders by covering all tissue grades required by the market. The tissue pilot plant features various configurations for the production of conventional, textured, and structured (TAD) tissue. It is available to tissue producers and suppliers, research and development companies, universities, and also for ANDRITZ's own R&D activities.

The different configurations of the tissue machine are offered as single-machine concepts on the market, enabling customers to run trials on what could potentially be their future machine.

ANDRITZ has installed its own Metris *Prime*Control E hardware and software at the pilot plant to monitor and control the different pilot machine configurations as well as the stock preparation. It includes alarm management, advanced reporting, drive systems, quality control systems, and remote support.

"We test our innovations extensively at our Tissue Innovation and Application Center. Customer like Vajda Papír can see their equipment in operation in advance under industrial-scale conditions."

Klaus Blechinger
Vice President Tissue
ANDRITZ

*Prime*LineTIAC – the birthplace of new products.

DISCOVER OUR FULL-RANGE PORTFOLIO FROM FIBER PROCESSING TO PAPERMAKING

An outstanding paper product requires outstanding production – matched with the particular needs of the raw material and final product. Discover the full-range portfolio from ANDRITZ: Excellent stock preparation that allows best fiber development according to furnish and with economical use of resources. *Prime*Line paper machines that are a synonym for producing top-quality tissue, paper, and board grades. Complete lines or single units, upgrades, and modernizations. Contact us and benefit from your individual package in papermaking technology.

AUSTRIA
ANDRITZ AG, Graz
p: +43 316 6902 0

ANDRITZ AG, Vienna
p: +43 508 055

ANDRITZ AG, St.Pölten
p: +43 508 052 1754

GERMANY
ANDRITZ Küsters GmbH
p: +49 2151 340

ITALY
ANDRITZ Como S.r.L.
p: +39 031 396332

ANDRITZ Novimpianti S.r.L.
p: +39 0583 30219

FINLAND
ANDRITZ OY
p: +358 0 20 450 5555

RUSSIA
LCC ANDRITZ
p: +7 812 315 0863

CHINA
ANDRITZ (CHINA) Ltd., Foshan
p: +86 757 8250 2636

ANDRITZ (CHINA) Ltd., Beijing
p: +86 10 8526 2720

JAPAN
ANDRITZ K.K.
p: +81 3 3536 9700

INDIA
ANDRITZ Technologies PVT Ltd.
p: +91 11 4937 2900

BRAZIL
ANDRITZ Brasil Ltda.
p: +55 41 2103 7601

CANADA
ANDRITZ Ltd.
p: +1 514 631 7700

USA
ANDRITZ Inc., Beloit
p: +1 815 389 8200

ANDRITZ Inc., Glens Falls
p: +1 518 683 5793

ANDRITZ Inc., Springfield
p: +1 413 733 6603

TISSUE@ANDRITZ.COM
ANDRITZ.COM