TWIN WIRE PRESS SERVICE

State-of-the-art technology
and customized solutions

ANDRITZ

Twin wire press service

State-of-the-art technology and customized solutions

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SPARE AND WEAR PARTS

ANDRITZ spare and wear parts are always state of the art thanks to our uncompromising production quality standards and OEM product expertise.

REBUILDS AND UPGRADES

By providing continuous service, ANDRITZ guarantees that the performance of your equipment remains at its original level and that safety standards are always observed. In addition, we offer a wide variety of upgrade products that not only improve performance but also provide energy and cost savings as well as ROI within a very short space of time.

AUDITS AND OPTIMIZATION

Our ANDRITZ specialists have extensive global experience in machine operation, start-up, and troubleshooting. They can identify opportunities for improvement, upgrades, and optimization of your dewatering equipment.

SERVICE AND MAINTENANCE CONTRACTS

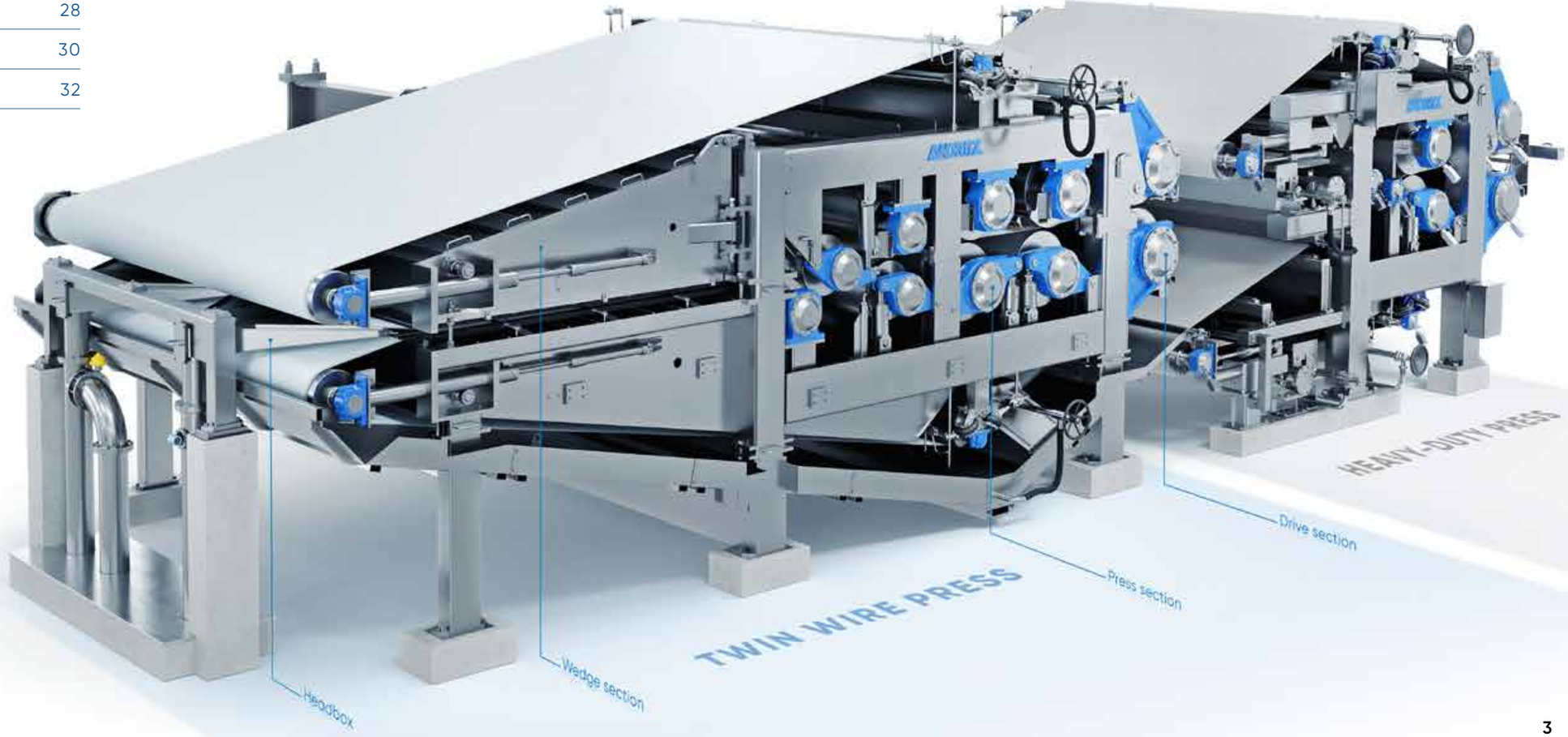
ANDRITZ works closely together with customers to maximize machine and process reliability. With our Paper Maintenance Performance (PMP) approach, we offer agreements on modular maintenance, performance study and implementation, shutdown management, as well as mill-wide and hybrid maintenance contracts.

APPLICATIONS

Twin wire presses:
- Pulp drying and wet lap systems
- HC bleaching systems
- Dewatering and washing stages

Heavy-duty press:
- Pulp drying and wet lap systems

ANDRITZ and other OEMs:
- Our service portfolio is also applicable to machines of various other designs and brands

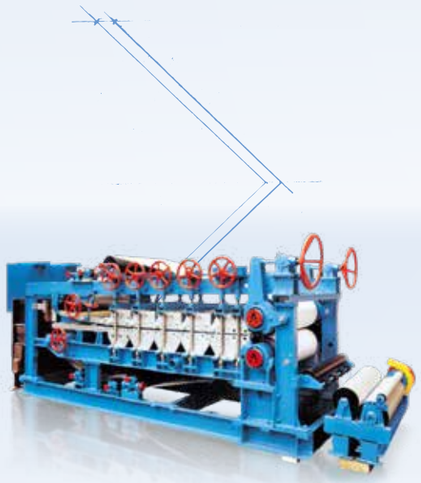


Long-term experience

A history spanning more than 70 years

ANDRITZ EXPERIENCE

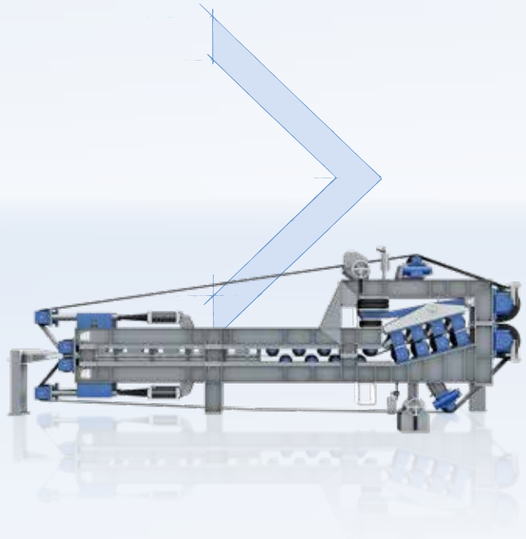
With over 600 twin wire press installations around the world and more than 70 years of experience, we are your reliable partner for twin wire press technologies, spare and wear parts, and customer-specific services. In-house design capabilities in combination with manufacturing according to strict quality criteria ensure top quality at market-driven prices.



1950

BEGINNING OF OUR DEWATERING HISTORY

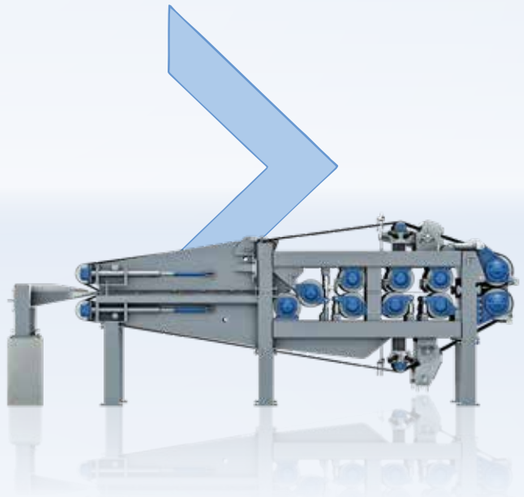
- 100% manual adjustment



1985

LOW-LOAD PNEUMATIC PRESS

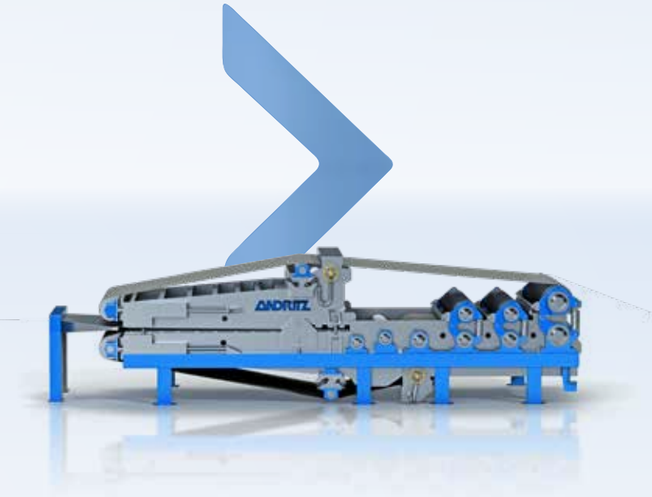
- Wedge zone with fixed inlet and outlet gap
- Pneumatic nip loading of up to 120 N/mm
- Partly automated



1996

HIGH-LOAD HYDRAULIC PRESS

- Floating wedge zone
- Hydraulic nip loading of up to 300 N/mm
- Fully automated



2010

PIN-SEAM DESIGN PRESS

- No cantilevering
- Floating wedge zone
- Hydraulic nip loading of up to 150 N/mm
- Fully automated
- Easy roll exchange

In-depth process know-how

The key to higher efficiency

PROCESS KNOWLEDGE

Often it’s not enough to just look at a single component. You need to see the big picture. The key here is process know-how. We at ANDRITZ have gathered in-depth knowledge in various processes in the pulp and paper industry over many years.

Benefit from our manufacturing know-how and let us help you integrate the right products in your individual processes. We have proven time and again that our service products in combination with our process expertise lead to a measurable increase in production efficiency and a lower total cost of ownership.

Upgrade from low-consistency to medium-consistency headbox

For higher production capacities

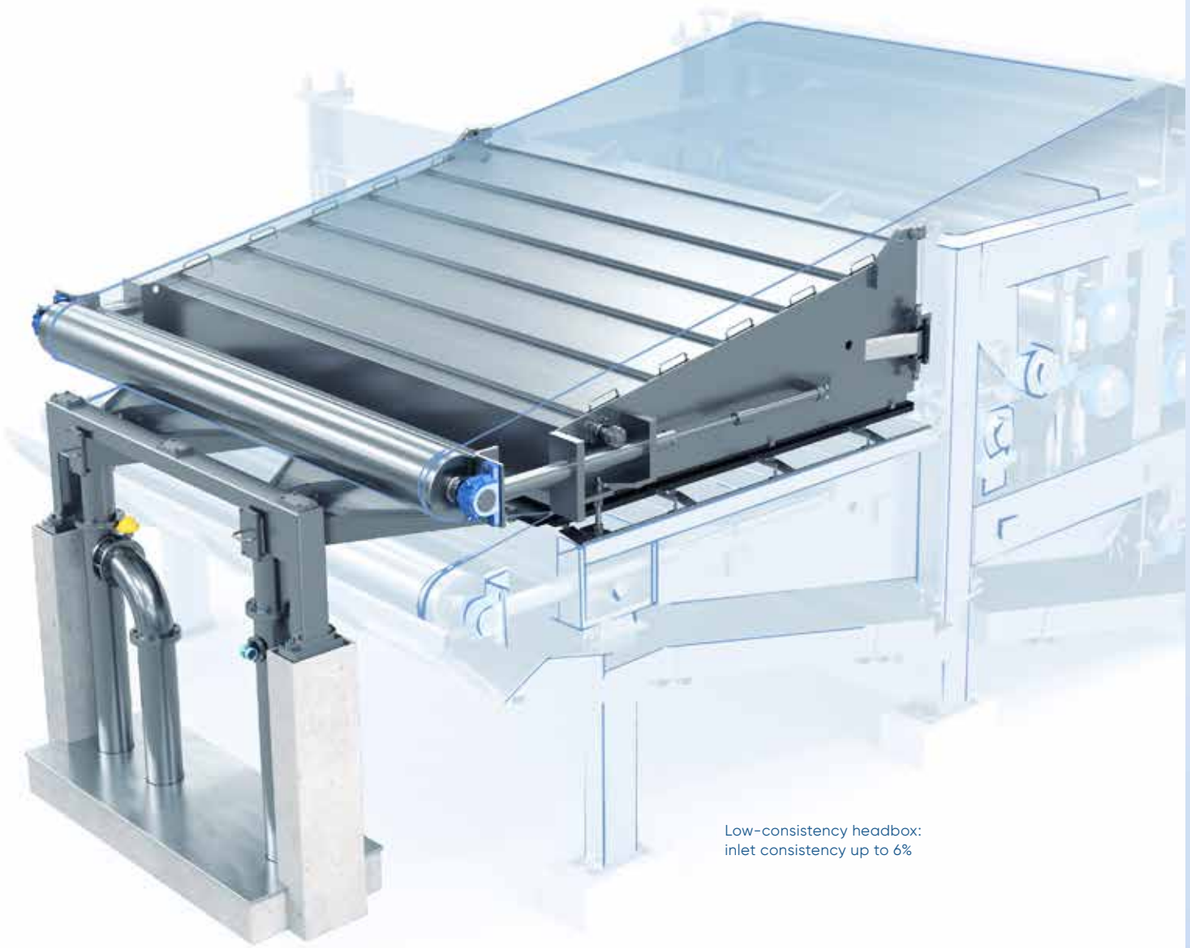
THE CHALLENGE:
PRODUCTION INCREASE ON TWIN WIRE PRESS

With a capacity increase in a pulp production or fiber preparation process, the twin wire press might end up leading to a bottleneck. With a higher feed consistency, the production rate of the press can be increased considerably.

THE SOLUTION:
HEADBOX UPGRADE FROM LC TO MC

The following actions are required to upgrade a twin wire press from a low-consistency (LC) feed application to a medium-consistency (MC) press:

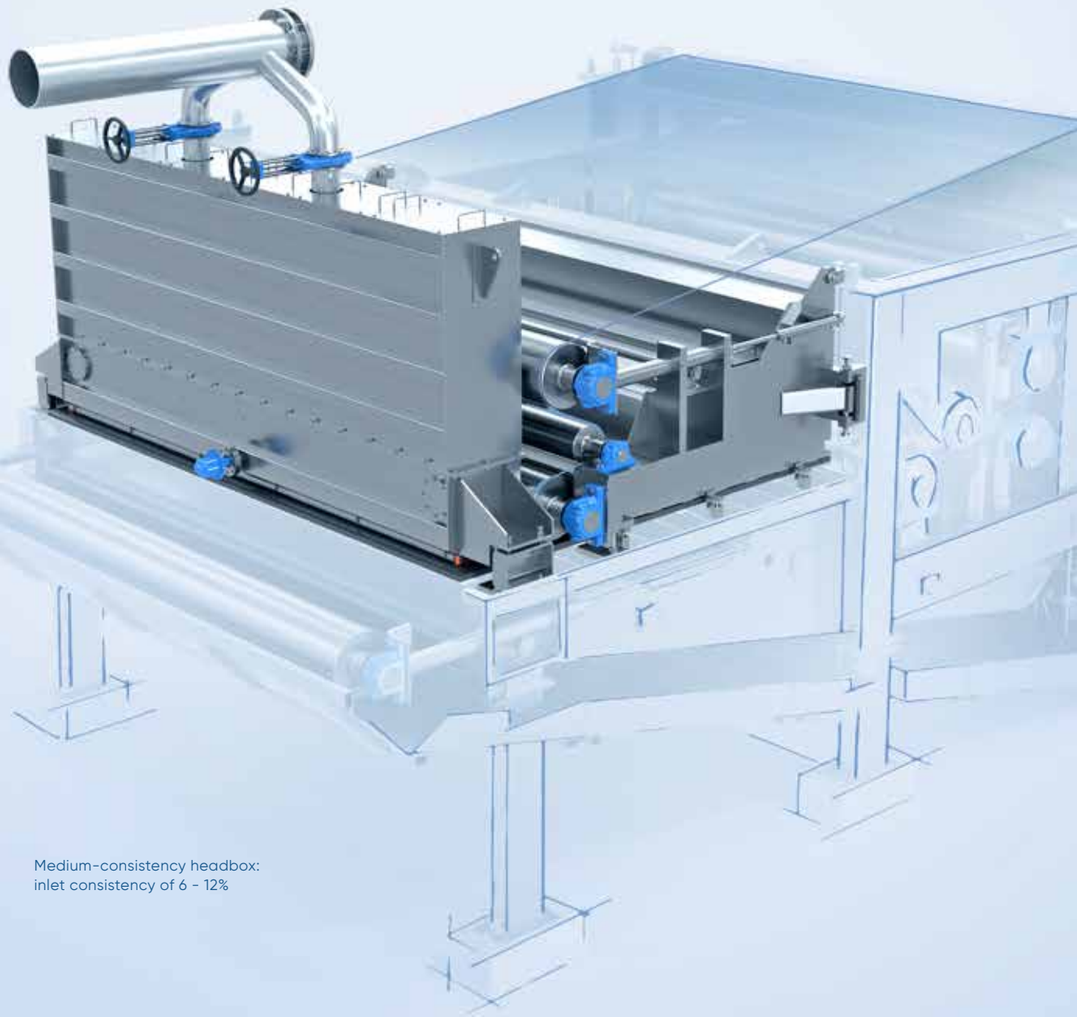
- Installation of a new MC headbox
- Installation of a new top wedge part
- Modification of the pulp approach system
- New drive (only if needed)



Low-consistency headbox:
inlet consistency up to 6%

BENEFITS

- Increased production rate in the range of 20 - 40%



Medium-consistency headbox:
inlet consistency of 6 - 12%

Floating wedge section adjustment (LC machines)

For improved dewatering right from the start

THE CHALLENGE: OPTIMUM DEWATERING IN THE WEDGE SECTION

To optimize performance of the twin wire press, dewatering must start right at the beginning of the wedge section. On the other hand, sufficient dryness is needed after the wedge zone. If the pulp sheet that enters the S- and press section is too wet, pulp will leak on both sides of the wires.

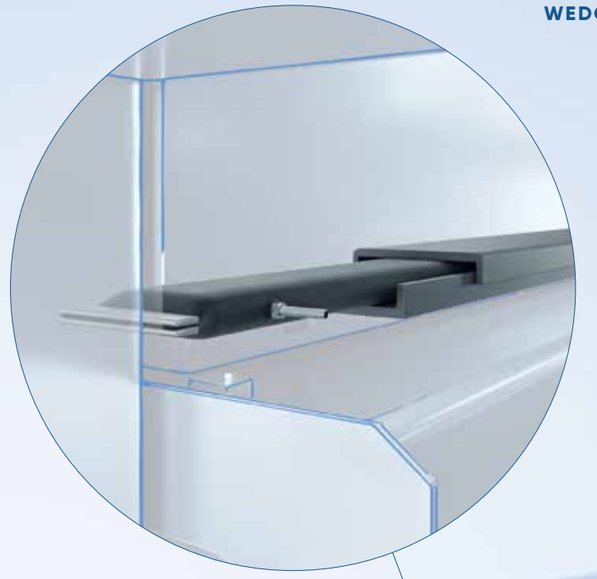
THE SOLUTION: ADJUST THE INLET AND OUTLET GAPS

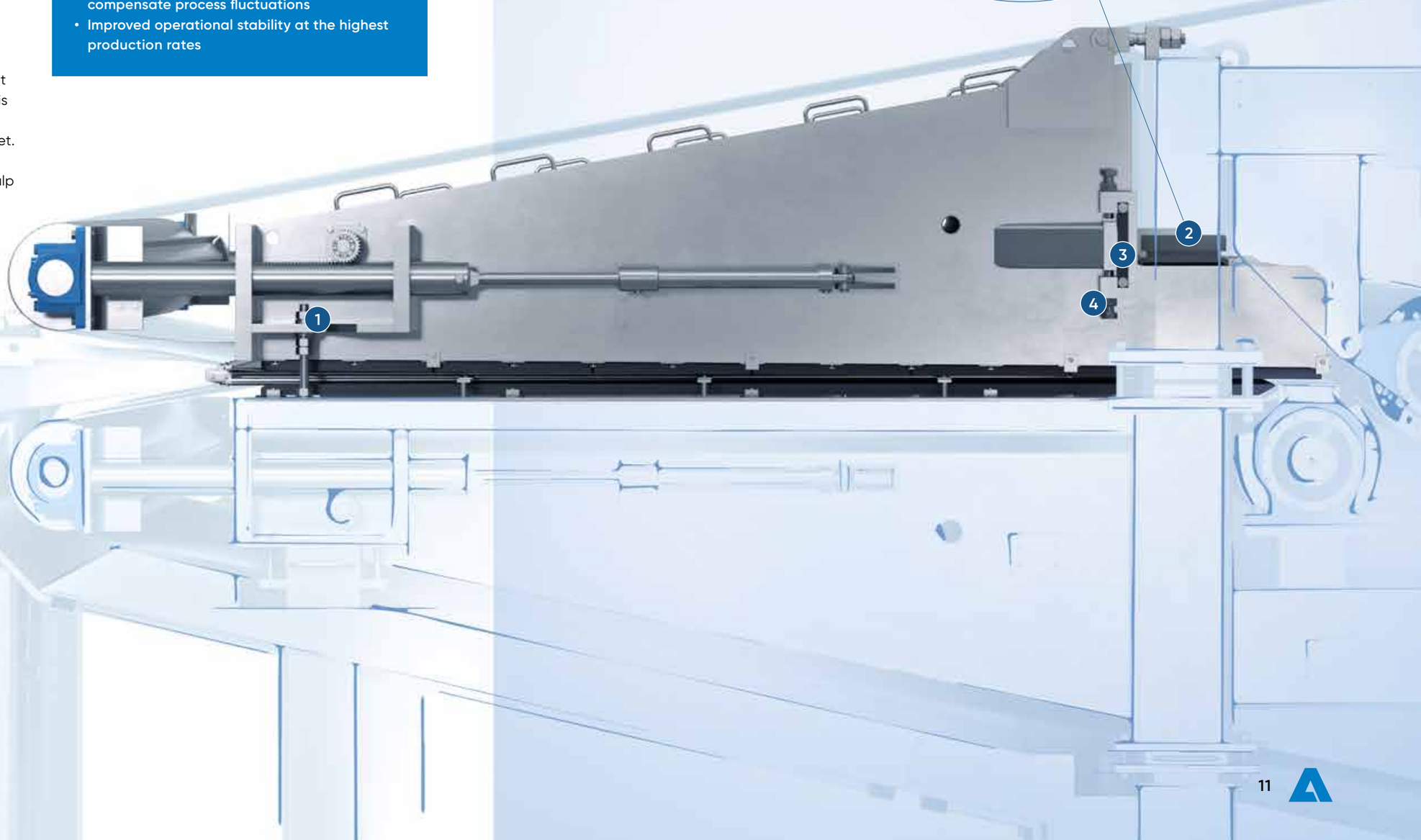
For perfect dewatering right from the start, the inlet gap needs to be as low as possible. Pump pressure is used to push the pulp in between the wires, which results in immediate dewatering at the machine inlet. The outlet gap needs to be adjusted to a suitable height to allow the top wedge part to float on the pulp sheet, so that variations in pulp feed or production conditions can be compensated. On the other hand, this ensures an adequate dryness level before the S- and press section.

BENEFITS

- Optimum dewatering in the floating wedge section from inlet to outlet
- Perfect sheet formation
- No pulp leakage in the S- and press section
- Allows the wedge section to fully self-compensate process fluctuations
- Improved operational stability at the highest production rates

1 Inlet adjustment spindle
2 Air bellow (inside the machine)
3 Sliding block
4 Limit screws





Dewatering boards

Fishbone design: More open area in the wedge section

THE CHALLENGE:
CREATE MORE OPEN AREA FOR GENTLE DEWATERING

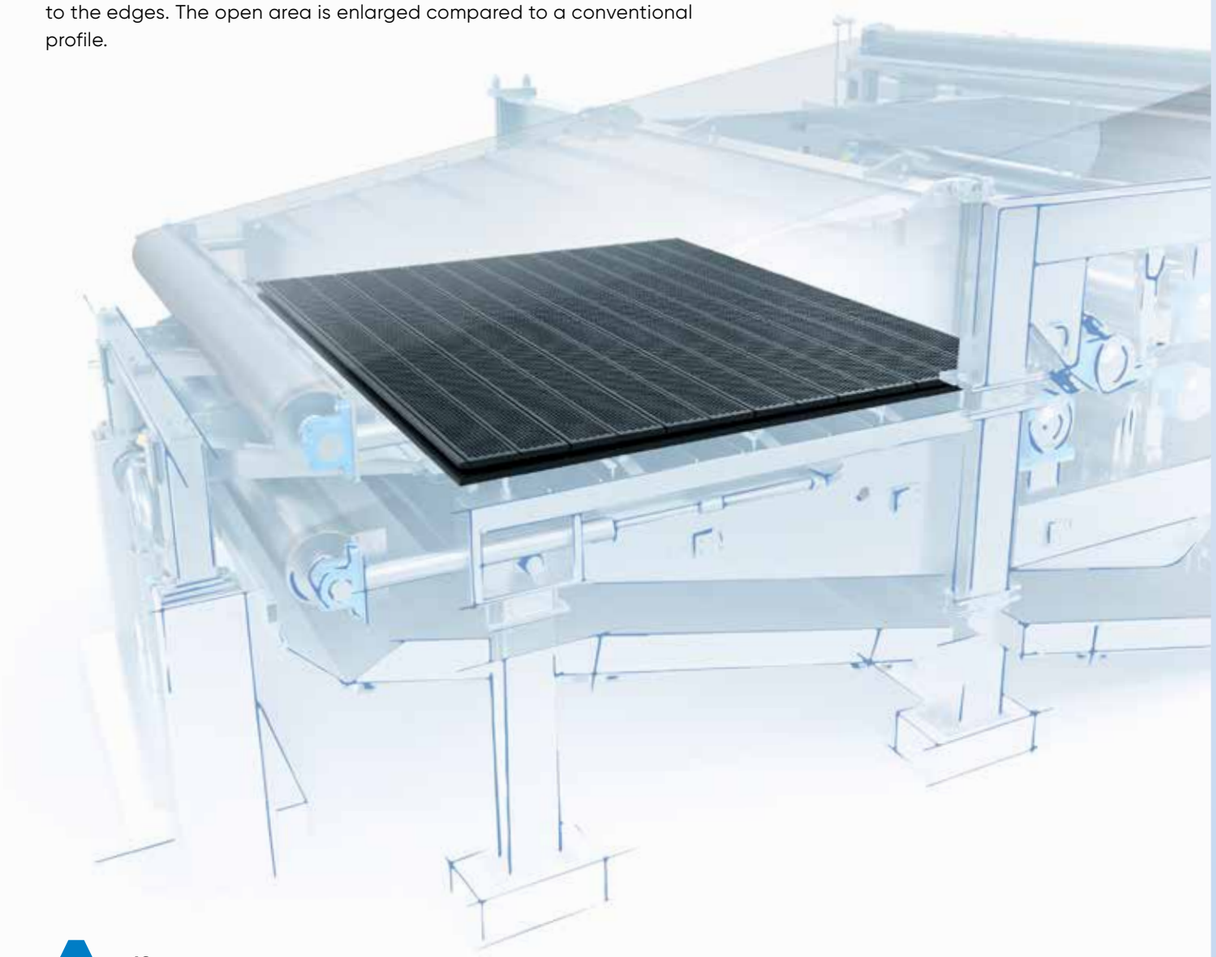
The operating stability of a twin wire press greatly depends on the interaction between the wedge section and the press nips. If the process is unstable, deviations in pulp consistency and freeness will create serious problems in the wedge zone. Depending on the application, improving the dewatering of the pulp by enlarging the open area in the dewatering boards in LC machines leads to increased stability and performance.

THE SOLUTION:
ANDRITZ FISHBONE DESIGN

The additional cross-channels of the ANDRITZ Fishbone dewatering boards produce an improved dewatering effect. The grooved profile channels spread the filtrate flow across the entire surface area – right to the edges. The open area is enlarged compared to a conventional profile.

BENEFITS

- Up to 20% more open area and gentle dewatering
- Cross-channels spread filtrate over entire wire area
- Optimal wire width stretching due to additional cross-forces
- Quick and easy exchange, no machine modification needed



Dewatering boards

Stainless steel design: To prevent plugging

THE CHALLENGE:
PREVENT PLUGGING OF DEWATERING BOARDS

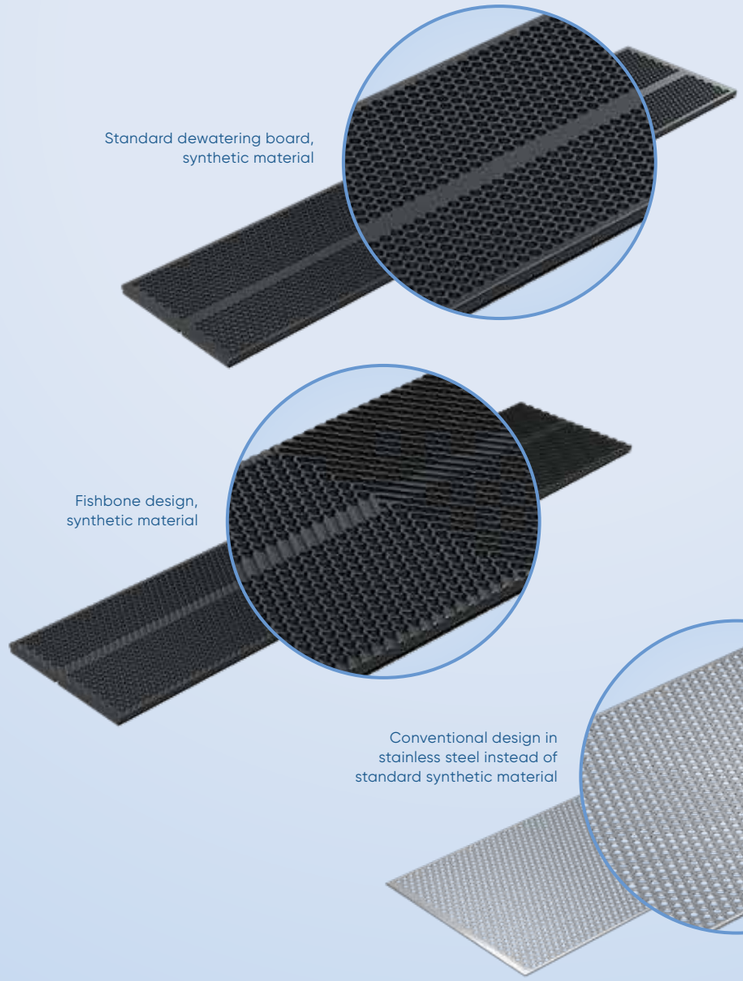
Plastic dewatering boards – the standard material in many twin wire presses – need to be quite "thick" (40 mm) for reasons of stability. The deep dewatering holes in the boards, however, have a tendency to plug. Plugged dewatering boards cause a drop in dewatering performance and substantially reduce the productivity of the machine.

THE SOLUTION:
STAINLESS STEEL DEWATERING BOARDS

The stainless steel material gives the wedge plates an extremely long lifetime, while the special thin design reduces the risk of plugging. This results in improved productivity and less maintenance effort.

BENEFITS

- Extremely long lifetime
- Constant dewatering performance without plugged holes
- Reduced maintenance costs
- Improved operational safety
- Quick and easy exchange, no machine modification needed



Standard dewatering board, synthetic material

Fishbone design, synthetic material

Conventional design in stainless steel instead of standard synthetic material

Side seals

Improved design for efficient sealing

THE CHALLENGE:
EFFICIENT SIDE SEALING IN THE WEDGE SECTION

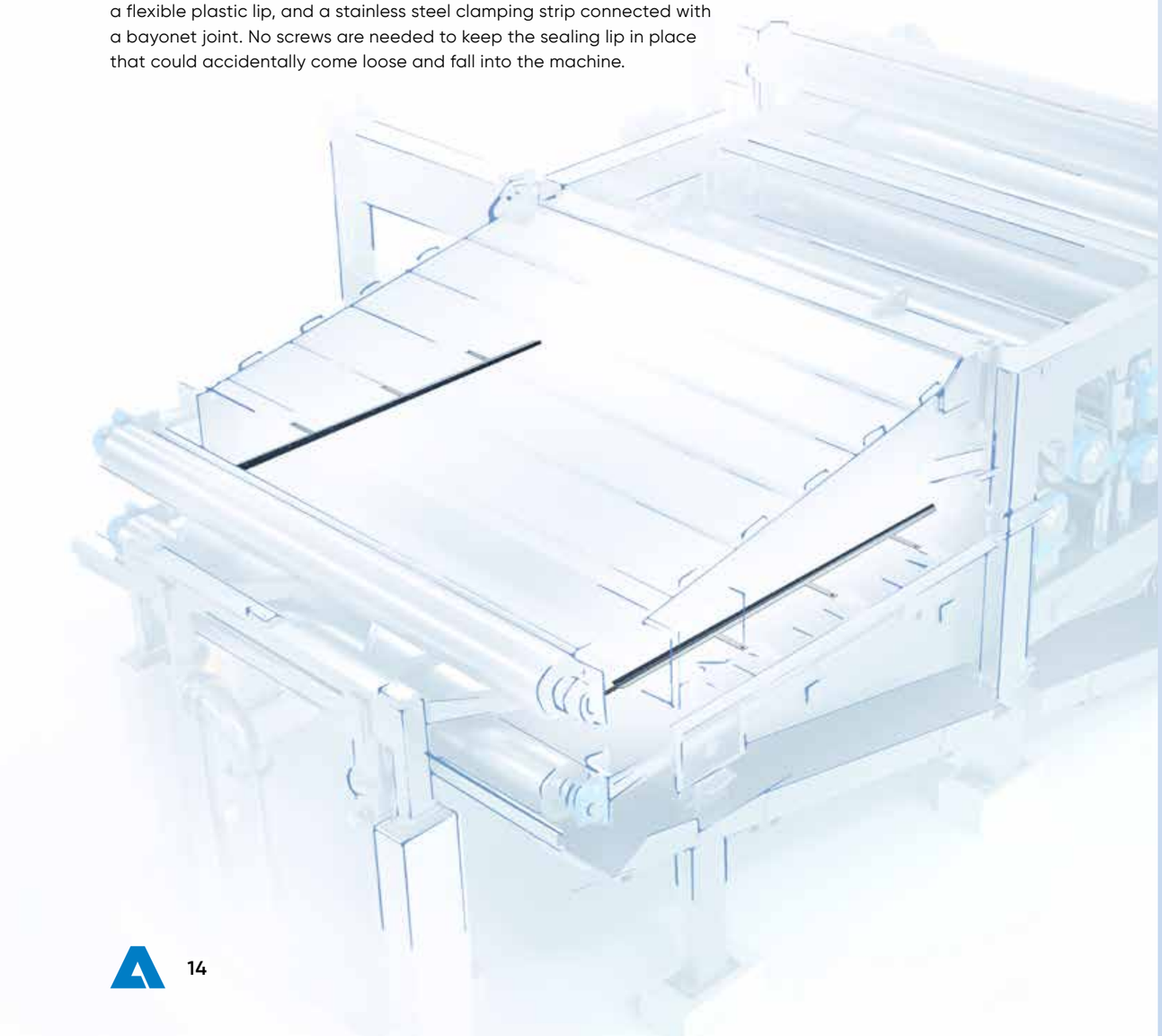
During operation, the sealing lip may be deformed due to different degrees of thermal expansion in the materials, thus leading to leakages. Small parts in screwed seal models need to be replaced if they get lost. In the worst case scenario, they may even fall into the machine and damage the wire.

SOLUTION 1:
SIDE SEAL WITH BAYONET CONNECTION

The standard ANDRITZ side seal design comprises a stainless steel holder, a flexible plastic lip, and a stainless steel clamping strip connected with a bayonet joint. No screws are needed to keep the sealing lip in place that could accidentally come loose and fall into the machine.

BENEFITS

- Lip elongation is compensated without deforming the lip
- Quick and easy sealing lip exchange thanks to bayonet joint
- No small parts that could accidentally damage the wire



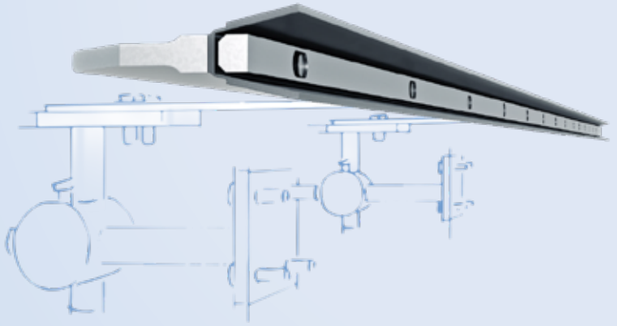
SOLUTION 2:
ANDRITZ DOVETAIL SIDE SEAL

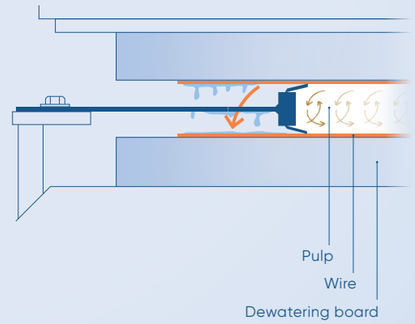
The stainless steel holder and the plastic lip are connected with a dovetail joint without any pins or screws. The new sealing lip has a smooth surface without any internal fixing elements. Thanks to the reduced friction between the pulp and the seal no turbulences build up in the pulp close to the seal. The special lip holder design prevents the filtrate from overflowing and the bottom wire being blocked with fibers.

BENEFITS

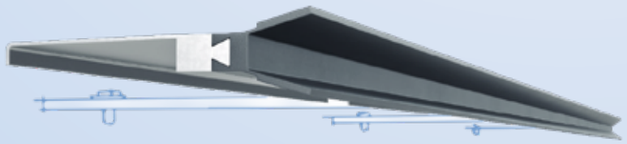
- Lip elongation is compensated without deforming the lip
- Less fibers on the edges of the bottom wire and rolls
- No build-up of turbulences in the pulp close to the seal
- Quick and easy sealing lip exchange with dovetail connection
- No small parts that could accidentally damage the wire

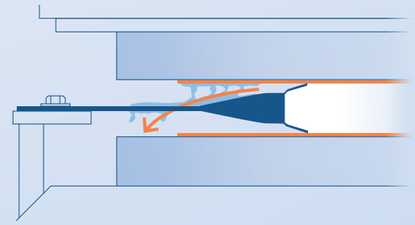
Solution 1: ANDRITZ side seal with bayonet joint

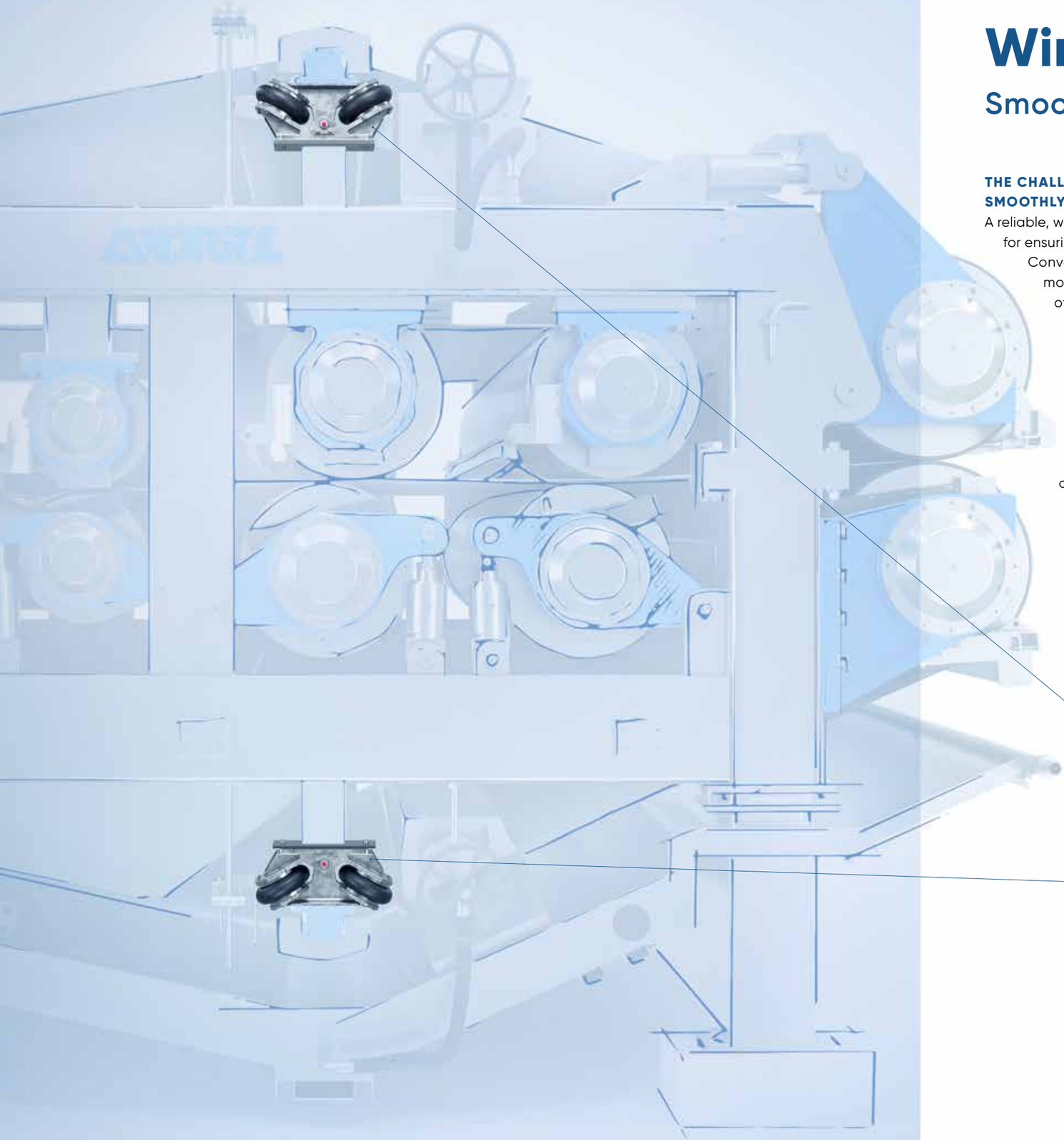




Solution 2: ANDRITZ dovetail side seal with smooth lip surface and improved holder design







Wire regulation unit

Smoothly running ANDRITZ design

THE CHALLENGE:
SMOOTHLY AND RELIABLE WIRE REGULATION

A reliable, well functioning wire regulation system is indispensable for ensuring the trouble-free operation of dewatering machines. Conventional wire regulation units perform a lengthwise movement, which is fault-prone. They usually have a lot of parts, which results in increased maintenance effort.

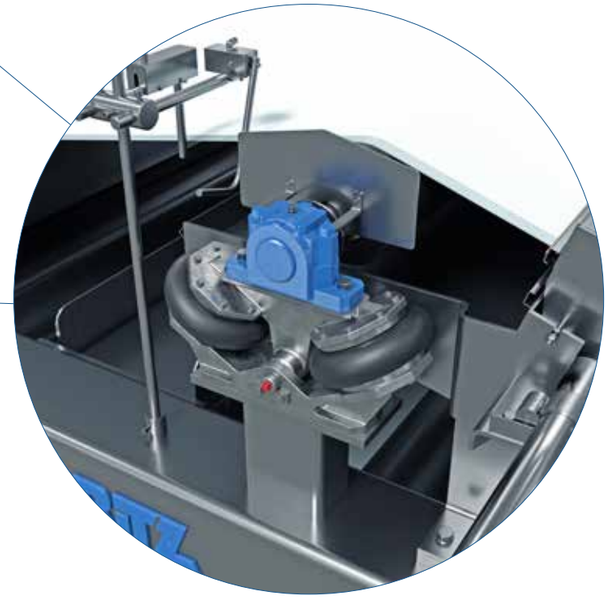
THE SOLUTION:
ANDRITZ RG-TYPE WIRE REGULATION UNIT

The new wire regulation unit has a pivoting saddle onto which the bearing housing of the wire tracking roll is screwed. Two mutually acting air bellows turn this saddle, with the result that the regulating roll has a slanted position. This ensures precise guidance of the wire based on a rapid response to the wire regulation control unit.

Only a few simple changes need to be made because the RG-type unit has the same dimensions as the existing one. The fixation of the regulation unit on the frame and of the bearing casing in the unit as well as the position of the wire regulation roll are identical.

BENEFITS

- Smooth running due to pivoting saddle movement
- Precise control thanks to uniform and rapid response
- Simple construction, no expensive sealing required
- Stainless steel design
- Improved maintenance



The new RG-type wire regulation unit from ANDRITZ is applicable to all twin wire press brands and models.

Press section services

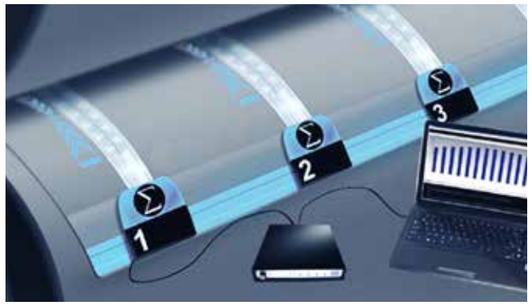
Everything from a single source

MECHANICAL ROLL SERVICE

ANDRITZ has extensive roll service expertise and specializes in repairing, reconditioning, and upgrading all types of rolls in twin wire presses and heavy-duty presses, no matter what make or manufacturer. We have workshop facilities equipped with state-of-the-art machines and tools and can also provide experienced technicians for each roll processing and machining step.

SMOOTH AND GROOVED STAINLESS STEEL COVER

Roll covers made of rubber or polyurethane suffer wear during operation. Rolls clad in stainless steel virtually do not wear and therefore don't require any further maintenance. At high production levels with increased dewatering demands, ANDRITZ recommends installing grooved stainless steel rolls at various points of a twin wire press instead of smooth ones.



NIP PROFILER SERVICE

The ANDRITZ Nip Profiler Service – based on the proven Sigma-Nip tool – provides a real-time analysis and the visualization of nip footprint across the press nip. Easy nip adjustment checks can be performed with a loaded nip, obtaining immediate feedback from the Nip Profiler software. This ensures easy optimization of the press section after all the data has been collected.

PRESS NIP OPTIMIZATION

The hydraulic pressure in the press nips increases along with the nip load, and so does water removal. If the hydraulic pressure is increased above a certain limit, however, this will lead to destroying the sheet formation, to pulp leakage to both sides in front of the press nip, or in the worst case, to pulp blockage in the press nip. Setting the nip loads high enough to achieve the required dryness levels, while avoiding hydraulic overloading ensures perfect dewatering results and excellent sheet formation.

WHY CHOOSE ANDRITZ?

- A single partner for all press section-related issues
- High-grade compounds: also suitable for demanding applications
- Solutions for a longer lifetime: rolls with stainless steel cladding or made entirely of stainless steel can be in operation for many years
- On-site services for press section optimization to achieve improved dewatering results
- Services offered for all types of twin wire press rolls, irrespective of the original manufacturer

Press nip optimization prevents pulp blockage while improving dewatering and sheet quality

PRESS SECTION

Hydraulic cylinders

Increased wire lifetime

THE CHALLENGE:
PREVENT DAMAGED WIRE EDGES

In many twin wire presses, each pair of press rolls is pressure-loaded with the help of hydraulic cylinders that generate the pressure in the press nip. If – for whatever reason – the press is operated with pressure-loaded press nips but no pulp, the wires may be damaged. Such incidents may affect dewatering efficiency and considerably reduce the lifetime of wires.

THE SOLUTION:
HYDRAULIC CYLINDER WITH MECHANICAL STOPPER

Using the new ANDRITZ Press Roll Stopper with an integrated mechanical limit, the exact stroke of the cylinder can be limited and adjusted within a range of ±10 mm. This ensures a minimum gap between the top and bottom press rolls when the press nip is pressure-loaded (without pulp). The wire edges will no longer be damaged.

BENEFITS

- Increased lifetime of wires
- Better roll cover durability
- Replacement of existing cylinders without machine rebuild
- Easy adjustment
- Simple mechanical solution with no impact on the hydraulic or control system

New ANDRITZ Press Roll Stopper:
press nip safety gap can be adjusted

Drive system

Direct drive ensures easy dismounting of drive rolls

THE CHALLENGE:
REDUCTION OF MAINTENANCE COST AND MACHINE DOWNTIME

Usually, the drive rolls of a twin wire press need to be removed once a year to regrind or replace the roll cover. In many twin wire presses, the drive comprises two planetary gearboxes with torque arms in both directions. The motors are often flanged directly onto the gearboxes. A shrink disc connects the gearbox and the drive roll journal.

This construction has a few downsides:

- Disassembling the gearbox is complicated, because the shrink disc coupling is difficult to access.
- As a result of the torque arms, it's not possible to remove only the lower roll.
- There is a high load on each drive-side roll journal and bearing carrying the weight of gearbox and motor, as well as the load of the torque arms.

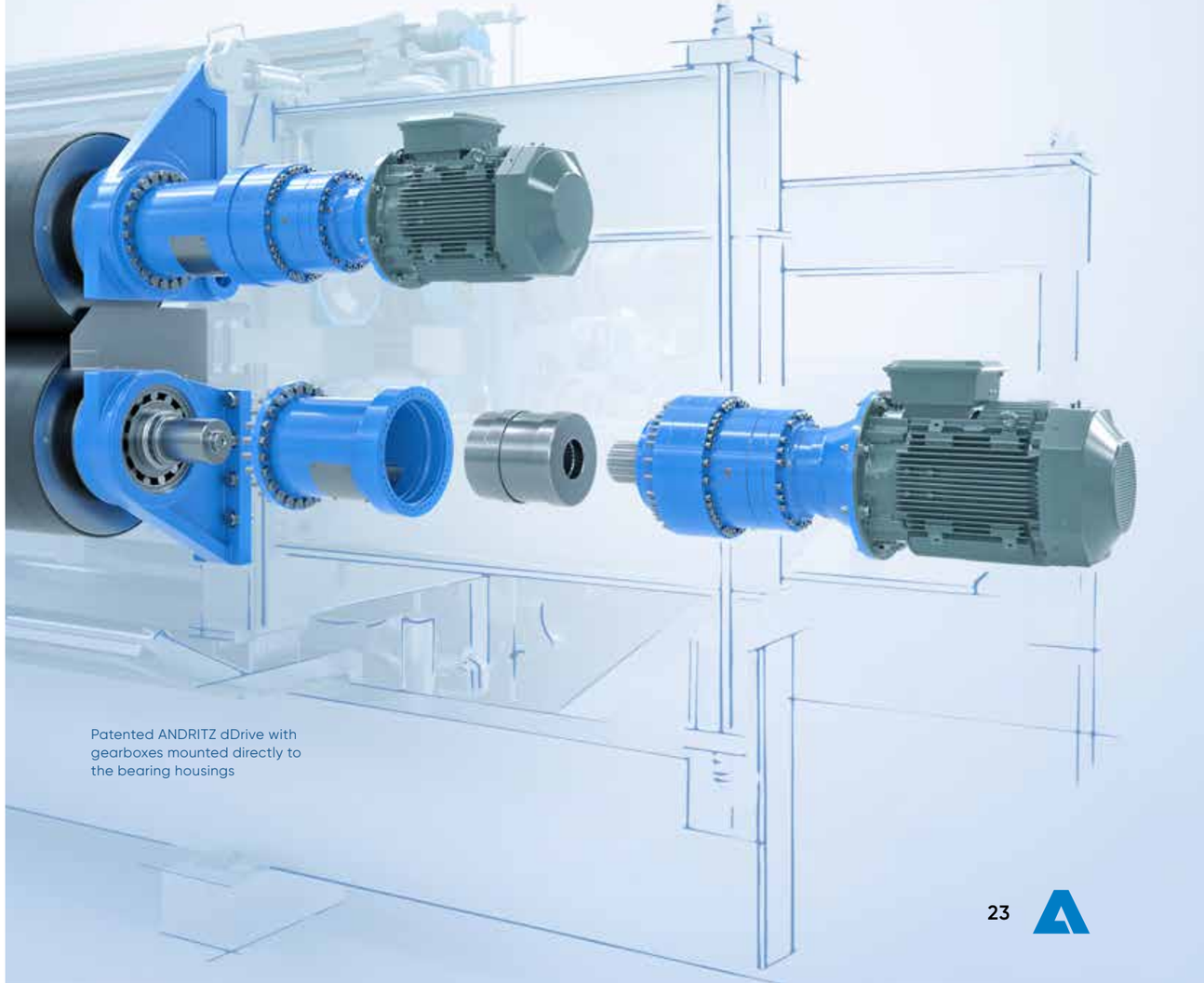
Standard drive with shrink disc couplings and motors flanged onto the gearboxes

THE SOLUTION:
PATENTED ANDRITZ dDRIVE

In the new ANDRITZ direct drive (the so-called dDrive), each gearbox is mounted directly onto the new reinforced bearing housing of the drive roll. The planetary gear is connected to the bearing housing by a gear lantern. The entire weight load is carried by the new bearing housing, not by the roll journal or bearing anymore. The gear lantern serves as torque arm transferring the torque force into the machine frame. Each gearbox can be dismounted quickly and easily thanks to a tooth coupling replacing the shrink disk.

BENEFITS

- Each drive roll can be dismounted separately.
- The gearbox and motor can be removed as a single unit.
- Maintenance costs and machine downtime are reduced considerably.
- The closed system ensures better corrosion protection.
- The drive-side roll journals and bearings have a longer lifetime.
- The patented ANDRITZ dDrive design can be adjusted to all sizes of twin wire presses.

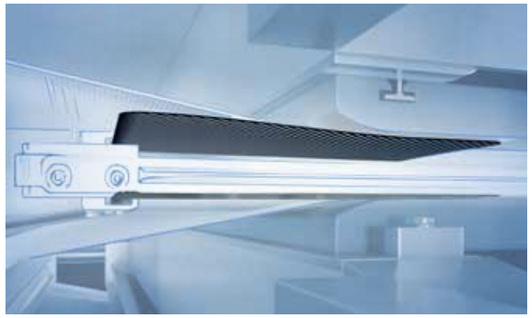


Patented ANDRITZ dDrive with gearboxes mounted directly to the bearing housings

SERVICE PRODUCTS

Further service products

For higher machine availability

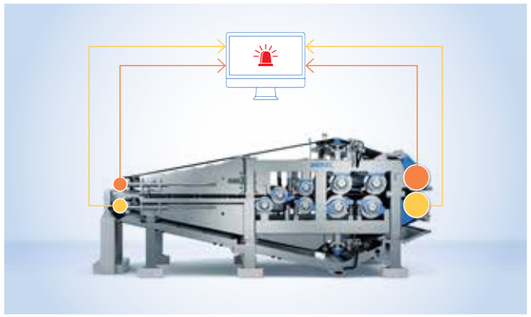


1 LC HEADBOX SEALS

The headbox sealing lips that avoid pulp leakage at the wedge zone inlet can be upgraded to stainless steel or carbon material – both of which have a much longer lifetime than the standard material. The light-weight carbon material would be used for the upper lip, while the heavy-weight stainless steel lip would be installed at the bottom.

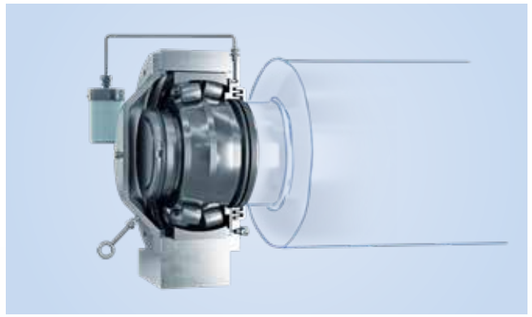
2 SLIDING BLOCKS MADE OF BRONZE

In the floating wedge section, the top part rides in axial direction against sliding blocks that are usually made of plastic. The new sliding blocks made of bronze are much more resistant to wear and have a longer service lifetime.



3 WIRE BREAK AND SLIPPAGE MONITORING

Continuous and heavy wire slippage can lead to operational problems, increased wear of roll covers and wires, and even breaks. The ANDRITZ wire break and slippage monitoring system has been developed to detect wire slippage and minor wire breaks, so that counter-measures can be taken in good time, thus reducing the risk of further damage and machine standstills caused by a broken wire.



4 ROLL BEARING PROTECTION PACKAGE

ANDRITZ has developed a roll bearing protection package to ensure that the machine shutdowns to replace defective bearings are reduced to an absolute minimum. The bearing protection package consists of three different components to ensure individual bearing protection solutions:

- Modified splash guards
- Double-labyrinth seal
- Improved lubrication system

HEAVY-DUTY PRESS

Heavy-duty press

Dewatering at the highest levels

Heavy-duty presses are often installed in wetlap and pulp drying process lines. ANDRITZ provides a couple of services and upgrade products, such as …

PROFESSIONAL ROLL SERVICE
Press rolls that have to withstand line loads of up to 350 N/mm need special attention to keep them in good shape for efficient and safe machine operation. With its comprehensive roll service expertise ANDRITZ specializes in repairing and reconditioning all rolls in heavy-duty presses (see page 18).

SMOOTHLY RUNNING WIRE REGULATION UNIT
Upgrading the wire regulation unit to the patented ANDRITZ RG-type design, guarantees precise and steady guidance of the wire during machine operation. The simple stainless steel construction improves maintenance and machine availability (see page 16).

Equipment and process improvement survey

Basis for utilizing the full potential

THE CHALLENGE:
DECREASING PERFORMANCE

Twin wire press performance may decrease over the course of time. There are several possible reasons for this decrease in productivity and outlet dryness, including worn-out consumables and wear parts due to a lack of maintenance or incorrect adjustments. An effective survey conducted by ANDRITZ specialists together with your process experts can easily pinpoint measures for improvement.

THE SOLUTION:
PERFORMANCE EVALUATION

Professional and skilled ANDRITZ employees evaluate the operation and functionality of your equipment during operation and shut-down on site together with your experts. The result is a detailed report containing an extensive process description as well as recommended improvements and tasks.

BENEFITS

- Investigate and propose possibilities for increasing machine performance
- Determine options for improved mechanical reliability
- Optimize machine condition and maintenance handling
- Provide possibilities for automation and control improvements

Choose your improvement goal

When maintenance and service costs rise, machine performance is poor, or dewatering capacity is limited, upgrading your press may be the solution. The starting point will often be an extensive equipment and process survey (see page 28) – the easiest way to determine the condition of a machine and its potential for improvement.

Depending on your selected goal and the condition of your installed equipment, ANDRITZ recommends different adjustment measures and/or upgrade solutions, as shown in the following table.

		IMPROVEMENT GOALS			
	Page	Machine availability	Increased production	Increased dryness	Improved performance
Equipment and process improvement survey	28		✓	✓	✓
ROLLS					
Mechanical roll service	18	✓			
Stainless steel cover	18	✓			
Roll bearing protection package	25	✓			
HEADBOX					
Headbox upgrade from LC to MC	8		✓		
LC headbox safety valve	*	✓			
LC headbox seals	24	✓			
High-efficiency MC headbox side seals	*	✓			
WEDGE SECTION					
Wedge section adjustment	10	✓	✓	✓	✓
Sliding blocks made of bronze	24	✓			✓
Dewatering boards: Fishbone design	12		✓		✓
Dewatering boards: stainless steel	13	✓			✓
Side seals	14	✓			
WIRE REGULATION					
Wire regulation unit: RG-type design	16	✓			
PRESS SECTION					
Smooth stainless steel roll cover	18	✓			✓
Grooved stainless steel roll cover	18			✓	✓
Nip Profiler Service	18			✓	✓
Press nip optimization	19			✓	✓
Hydraulic cylinder / Press Roll Stopper	20	✓		✓	
DRIVE SECTION					
Nip Profiler Service	18	✓			✓
Wire break and slippage monitoring	25	✓			
Regrinding of drive roll edges	*	✓			
Direct drive / dDrive	22	✓			

* Not covered in this brochure

MACHINE IMPROVEMENTS

CASE STUDY

As good as new

Overhaul and relocation of dewatering machines

THE CHALLENGE

- Increased capacity and improved pulp quality in the dewatering stage between the TMP line and the paper machine that produces high-quality book papers
- Overhaul and relocation of existing dewatering machines:
  - Two second-hand ANDRITZ TWP 285LL twin wire presses
  - One existing ANDRITZ pulp screw press SCP 1407MM
- Rebuild and relocation of two existing screw conveyors

THE SOLUTION

- Dismantling both twin wire presses
- Overhauling the machines to make them as good as new
- Upgrading the press rolls with stainless steel cladding
- Refurbishing the moving parts and bearing housings
- Installing all machines and integrating them into the TMP plant

THE RESULTS

- **Great improvements in the quality of the final paper produced on the paper machine that is fed by the TMP line**
- **Reduction of bleaching chemicals in paper production**

CASE STUDY

Pulp leakage fixed, dryness increased

Upgrade of a competitor twin wire press

THE CHALLENGE

- Pulp leakage:
  - In the wedge section, because the original side seals are inadequate and hard to adjust
  - At the headbox outlet due to inefficient headbox seals
- Covers of press and drive rolls worn out
- Difficult maintenance situation and low machine runability

THE SOLUTION

- New ANDRITZ side seals with bayonet joint
- Addition of ANDRITZ headbox seals
- New press rolls with stainless steel cover reducing wear virtually to zero
- New special synthetic cover for drive rolls
- Machine optimization

THE RESULTS

- No pulp leakage
- Reduced maintenance time, costs, and effort
- 10% increase in outlet dryness leading to huge benefits in the subsequent drying process

ANDRITZ AG
Graz, Austria
p: +43 316 6902 2711

ANDRITZ OY
Kotka, Finland
p: +358 020 450 5555

ANDRITZ (CHINA) LTD.
Foshan, Guangdong, China
p: +86 757 8202 3502

ANDRITZ K.K.
Tokyo, Japan
p: +81 3 3536 9700

PT. ANDRITZ
Jakarta, Indonesia
p: +62 21 390 5001

ANDRITZ LTD.
Lachine, QC, Canada
p: +1 514 631 7900

ANDRITZ BRASIL LTDA.
Curitiba, Brazil
p: +55 41 2103 7601

ANDRITZ.COM/TWP-SERVICE
dewatering-service@andritz.com