



PULP & PAPER

***Prime*FILTER D**

**TECHNICALLY SUPERIOR PERFORMANCE
WITH LESS MAINTENANCE**

ANDRITZ

ENGINEERED SUCCESS



PrimeFilter D: Upgraded performance and lower maintenance

A series of technical innovations have been incorporated into the new ANDRITZ *PrimeFilter D* to deliver superior throughput and operation with reduced energy costs.

CONSIDERABLY HIGHER FEED CONSISTENCIES

Inlet consistencies with the *PrimeFilter D* can be up to 2% – considerably higher than a standard disc filter. With its advanced feed system, there is less thickening in the vat, obtaining higher efficiencies and improved filtrate quality. A wider range of operating speeds is possible compared to competitive designs. This uplift in production can be a 30% gain per disc surface area.

OPTIMUM MAT FORMATION ON CC BAGLESS SECTORS

The fiber mat created on the Conical Cell bagless sectors is optimized in terms of formation and uniformity. With a bagless design, there is no need to shut down operations to change filter bags. The design of the ANDRITZ sectors eliminates a performance shortcoming with other designs: forming an uneven mat that requires the filter to be run at lower speeds in order

to knock the fiber mat off adequately. This speed loss limits the operating window and the filter's capacity.

TWO-LEVEL SHAFT SEALING

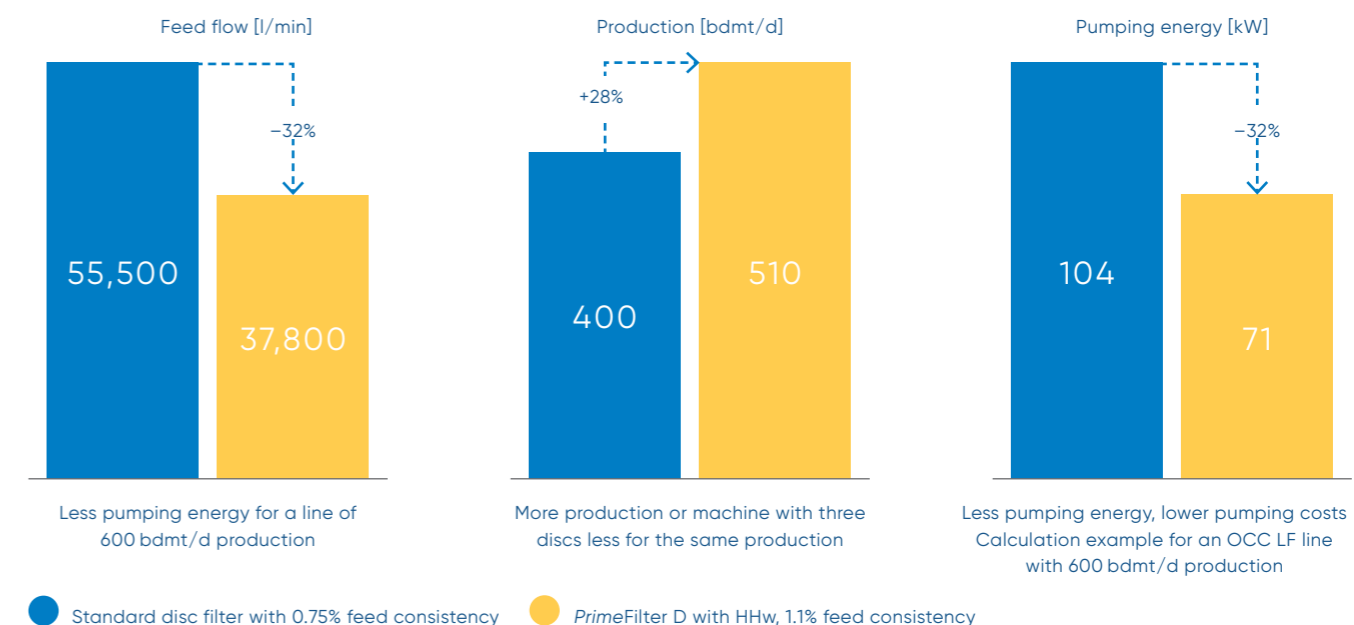
The *PrimeFilter D* has an advanced, double-shaft sealing. The two-level sealing prevents fibers to enter the filtrate while also sealing vacuum-from-atmosphere between the vat, shaft, and filtrate valve.

EASE OF MAINTENANCE

Maintenance improvements with the *PrimeFilter D* are significant. A positioning plate and seal at the base of each CC bagless sector ensure correct alignment and a firm seal to maintain filtrate quality without leaks. An improved design for aligning and supporting disc sectors, along with the unique guide rolls, ensure the mechanical integrity of each disc and smooth operation overall.

MAJOR ADVANTAGES OF THE *PrimeFilter D*

- HHw design with patented infeed chutes handles higher feed consistencies with lower specific energy consumption
- Wider space between discs to minimize rubbing forces on mat surface
- Guide rolls with internal bearings ensure smooth, guided disc rotation
- Conical Cell (CC) bagless sectors require minimal maintenance attention
- Sector design produces uniform fiber mats for fast and easy knock-off
- Two-level shaft sealing for improved reliability and filtrate quality
- Perfect positioning and sealing of CC sectors with shaft for leak-free operation



Higher feed consistencies with higher freeness pulps

The *PrimeFilter D* incorporates new technology to handle even the most demanding thickening applications.

The *PrimeFilter D*'s technical innovation – HHw – enables the filter to handle higher feed consistencies for pulp with a given CSF. HHw stands for *H*igh consistency, *H*igh freeness, and a wider space between discs.

With HHw, the filter produces more throughput at optimum flow conditions by enabling the unit to reach higher specific loads for a given feed consistency. For example, raising the feed consistency from 0.75 to 1.1% results in a 30% increase in specific production, which means that 30% less filter surface area would be required to maintain the same production.

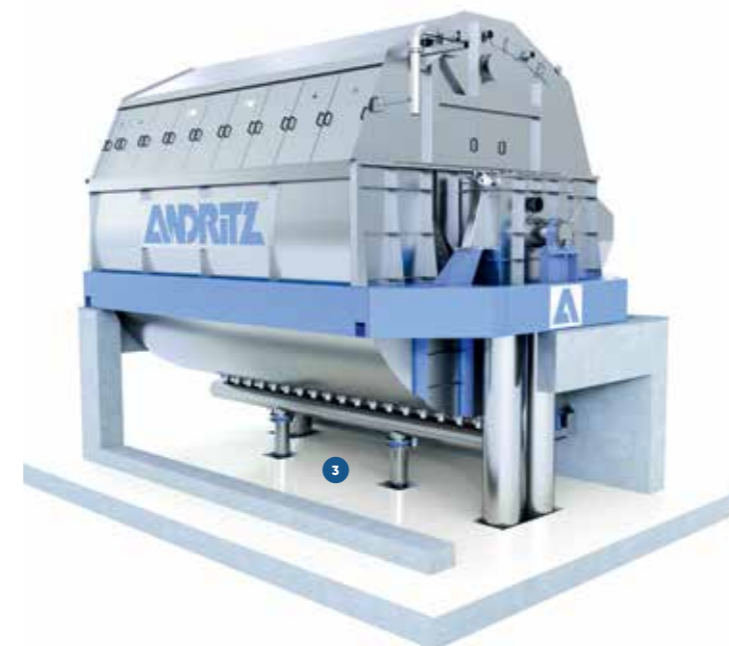
The filter's integrated feedbox with patented infeed chutes provides individual feed for each disc. There is more distance between the discs and outlet chutes, minimizing rubbing forces on the fiber mat surface,

which reduces the tendency for the mat to peel off when the disc sector is submerged.

Disc guiding rolls with internal bearings ensure smooth, stable, and guided rotation of each filter disc. This leads not only to smoother operation, but also to longer life of the filter internals.

As an option, stock can also be fed to the bottom of the vat to keep it properly diluted and avoid creating a "dead zone" for pulps with high drainage rates.

Wider space between discs and outlet chutes



- 1 Disc guides
- 2 Adjustable "doctor blades"
- 3 Second feed



- 1 Main feed
- 2 Feedbox
- 3 Feed chute
- 4 CC bagless sectors
- 5 Shower pipes
- 6 Filtrate valve
- 7 Discharge chute
- 8 Repulper
- 9 Hood with covers or hatches

PrimeFILTER D

Upgraded performance
and less maintenance

Higher speed and throughput due to disc sector design

The Conical Cell bagless sector design of the *PrimeFilter D* offers significant improvements in terms of operation and maintenance.

Each ANDRITZ Conical Cell bagless sector consists of two perforated metal sheets bonded together to make the structure rigid and to create symmetrical surfaces that are hydraulically optimized and easy to clean. The CC bagless sectors produce a uniform fiber mat that is easily doctored off in one piece.

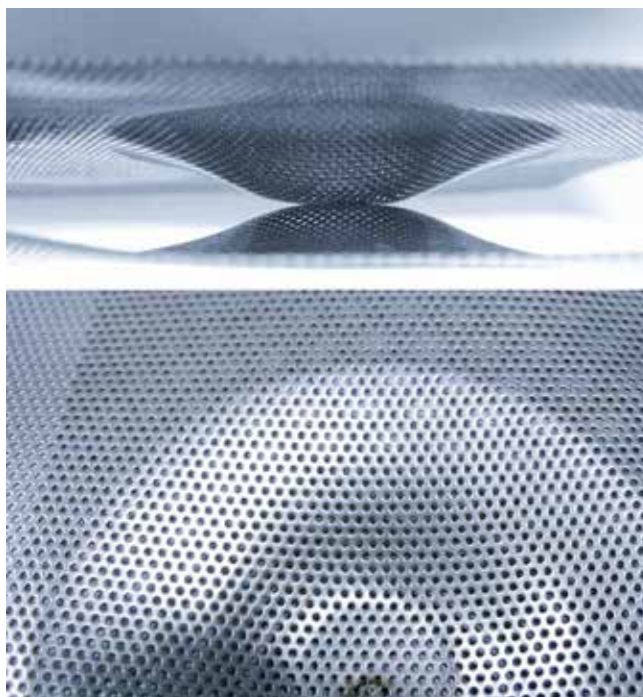
Compare this to older corrugated sector designs with "peaks and valleys." The corrugated surface creates a non-uniform fiber mat which dictates slower rotational speeds in order to knock the mat off adequately and also consumes more water in the knock-off process. With the *PrimeFilter D* being able to operate at faster rotational speeds, a production boost of about 15-20% can be expected.

A tapered positioning plate guides each CC bagless sector into position in the shaft – speeding up the

installation and ensuring exact centering on the shaft. A rugged rubber seal covers the sector foot flange to ensure sector-to-shaft sealing for stable vacuum and enhanced filtrate flow. The sector-locking system includes a guide bar in between the sectors and a fastening mechanism that perfectly aligns sectors while making the disc assembly stronger.

A single standard knock-off shower nozzle per sector is all that is required due to its smooth surface and symmetrical design. This reduces water consumption and pumping energy cost.

Inner structure of the CC bagless sector



5%

EFFECTIVE
INCREASE OF
DISC AREA

Improved seals for improved reliability and filtrate quality

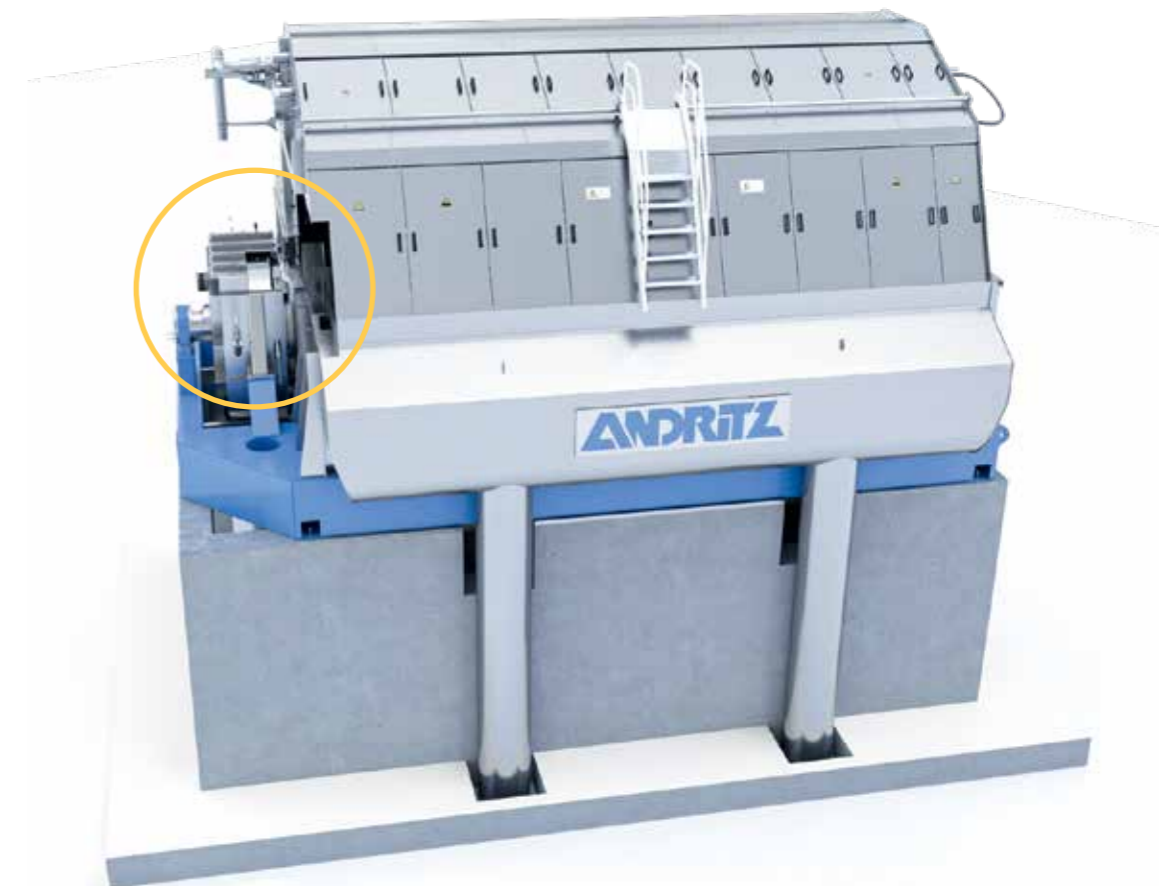
The advanced two-level arrangement in the *PrimeFilter D* offers operational and maintenance advantages.

A very significant technical advantage of the *PrimeFilter D* is its advanced double sealing arrangement. Other designs attempt to seal with a filtrate valve seal that is axially pressed against the rotating shaft end.

The *PrimeFilter D*'s two-level arrangement creates a seal between the vat and the shaft, and the shaft and filtrate valve. Unlike prior ANDRITZ filter designs, the filtrate valve is no longer bolted to the vat. The Sealing is outside of the valve, making it easy to access and eliminating the risk of fibers entering the filtrate directly. Ease of access allows the seal to be

exchanged without removing the filtrate valve housing, covers, and sealing support. In addition, no realignment of the filtrate valve is necessary after a seal exchange.

A hose inside the shaft seal is inflated with compressed air to uniformly support the sealing ring around its entire circumference. Compare this to the asymmetrical three-point spring system used in other designs, which creates uneven forces that in turn cause uneven wear on the seal.





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