



HIGH CAPACITY HIGH PERFORMANCE

TX68 REFINER FEATURES NEW FEED SYSTEM

ANDRITZ has designed a broad range of high-consistency (HC) refiners to meet the demands of pulp, paper, panelboard, and recycle producers. At the top of the line in terms of throughput and motor power is the TX68 twin refiner.

With unmatched design capacity, the TX68 refiner is both a workhorse and a racehorse. One look at its design and build shows why it can achieve continuous high throughput, high speed, and

long life. In developing the TX68, ANDRITZ re-examined the refiner design from end-to-end with an eye toward simplification, symmetry, and strength.

PRECISE, CONSTANT REFINING GAP

The TX68 is a twin refiner, combining two refining zones in one machine. It maintains a constant refining gap to ensure the best application of specific energy to the fiber while keeping pulp quality constant over time. This is due to a design that balances the forces on the disc and robust construction of both the rotating disc and the stators. The TX68 incorporates Zero Spin Deflection – centrifugal forces are 90° to refiner axis – a feature that eliminates the influence of negative rotor dynamics (such as an imbalance of deflection of the shaft) on plate parallelism and the refining gap. In addition, two-axes tramming allows adjustment to keep the rotating and stationary plates perfectly parallel.

The refining gap in the TX68 is amazingly precise for such a high-throughput machine. The gap is automatically adjusted with a fast and accurate plate adjustment system. A small and constant gap across the entire

diameter of the disc produces less shives and better fiber quality. The position of the rotating disc is fixed and the stator position precisely defines the refining gap on each side of the TX68. Hydraulic cylinders on each end are servo-controlled to automatically adjust the gaps to allow fast loading and unloading in response to process fluctuations or operator entries.

ADVANCED FEEDING TAKES TX68 TO HIGHER CAPACITIES

The TX68 has separate chip feeding for each refiner side, separate back steam outlets on each refiner side, and a common blow line for fiber and steam.

When developing the TX68 to handle higher and higher capacities, ANDRITZ designers recognized that its traditional feed system had reached practical limitations and had become the bottleneck. Rethinking the design of the feed system became a priority. The result is a new advanced feed system that is a main advantage of the TX68 today.

Although "new" in its current form, the advanced feeding system combines well-tested and proven concepts of ANDRITZ's Side Entry Plug Feeder (SEPF) with a Constant Feeder (C-Feeder). The "new" development is that each side of the twin refiner has its own SEPF and C-Feeder.

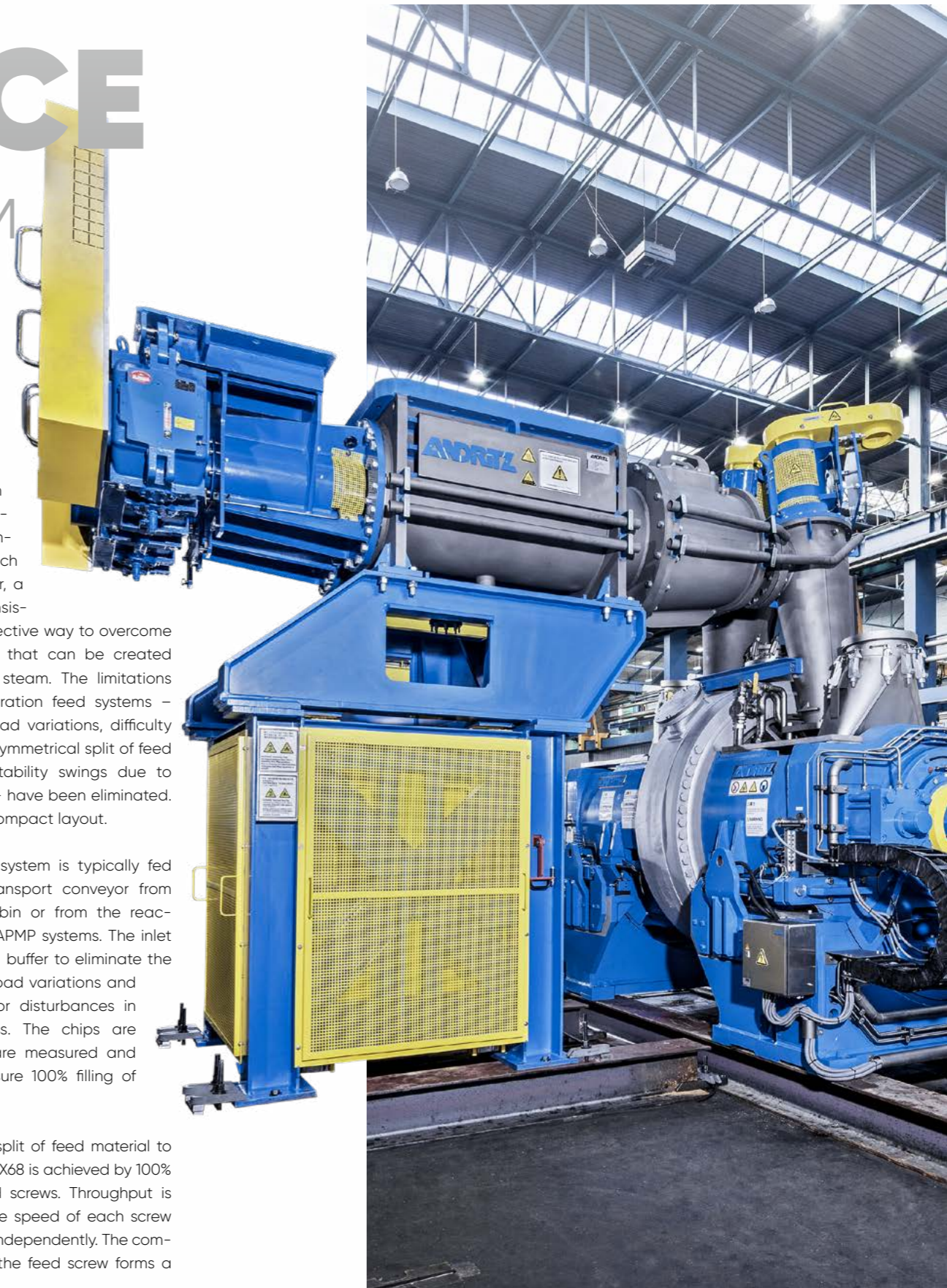
The DoubleSEPF feed system improves the feeding of the TX68 refiner and

provides better steam control. It ensures a constant feed, an exact and adjustable split of incoming chips on each side of the refiner, a constant feed consistency, and an effective way to overcome the disturbances that can be created by back-flowing steam. The limitations of previous-generation feed systems – such as motor load variations, difficulty in maintaining a symmetrical split of feed materials, and stability swings due to steam backflow – have been eliminated. All this in a very compact layout.

The DoubleSEPF system is typically fed directly via a transport conveyor from a pre-steaming bin or from the reaction bin in P-RC APMP systems. The inlet chute serves as a buffer to eliminate the effect on motor load variations and to allow for minor disturbances in upstream process. The chips are metered: levels are measured and controlled to ensure 100% filling of the feed screws.

The symmetrical split of feed material to each side of the TX68 is achieved by 100% filling of the feed screws. Throughput is determined by the speed of each screw and is controlled independently. The compression zone of the feed screw forms a

Constant feed of incoming chips, which are split exactly on each side of the refiner



dewatering area to eliminate free water and maintain a constant feed consistency.

When processing chips that have been treated and impregnated in an MSD Impressafiner, the DoubleSEPF forms a pressure-dense plug. Because of this, no large plug screw feeder is required. This allows for a much more compact layout than with the TX68's predecessor. The plug produced is positioned directly in front of the refiner. This prohibits backflow steam from entering the feed system – thus avoiding disturbances and improving motor load stability.

The screw in the C-Feeder continuously scrapes the homogeneous plug from the DoubleSEPF and moves it in a constant

and continuous flow of feedstock into the TX68. A floating seal between C-Feeder and refiner allows compensation for any thermal expansion.

EASE OF PLATE CHANGES

Two hydraulic systems are built into the TX68 to make plate changes easier and faster. One system lifts the feed system out of the way and the second opens the refiner casing. This provides direct, maintenance-friendly access to the refiner. A sliding flange at the inlet makes it simpler and faster to lift the unit.

PROVEN PERFORMER

The highest capacity TX68 operating today has a design throughput of 900 admt/d of eucalyptus pulp for the

production of both board and printing and writing grades. There are other units, with capacities around 500 admt/d on newsprint and improved newsprint applications, with pine and spruce as the raw material, which require higher specific refining energies and therefore have lower capacities. The future trend is for even higher capacities up to 1,500 admt/d, which is well within the design capability of the TX68.

CONTACT

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**TX68 TWIN REFINER
MAIN DATA**

DESIGN PRINCIPLE:

- Twin-disc refiner with two flat refining zones
- Simple supported shaft with bearing units on each side of the rotating disc
- Two floating stators; fixed rotor

Plate diameter:	68 in (173 cm)
Installed motor power:	Up to 40,000 kW at 2,300 rpm
Rotational speed:	1,500 – 2,300 rpm
Capacity:	Up to 1,500 admt/d
Feed material:	Wood chips, impregnated wood chips
Weight TX68 refiner:	51.6 tons (w/o feeding and motor)
Weight feeding system:	19.4 tons (w/o gearbox, belts, and motor)

Applications:

- ATMP: ANDRITZ process for softwood (Advanced Thermo Mechanical Pulping)
- P-RC APMP: ANDRITZ process for hardwood (Pre-conditioning Refiner Chemical Alkaline Peroxide Mechanical Pulp)



ANDRITZ TX68 refiner with DoubleSEPF (Side Entry Plug Feeder) and C-Feeder (Constant Feeder)



Feeding system lifted for twin refiner opening