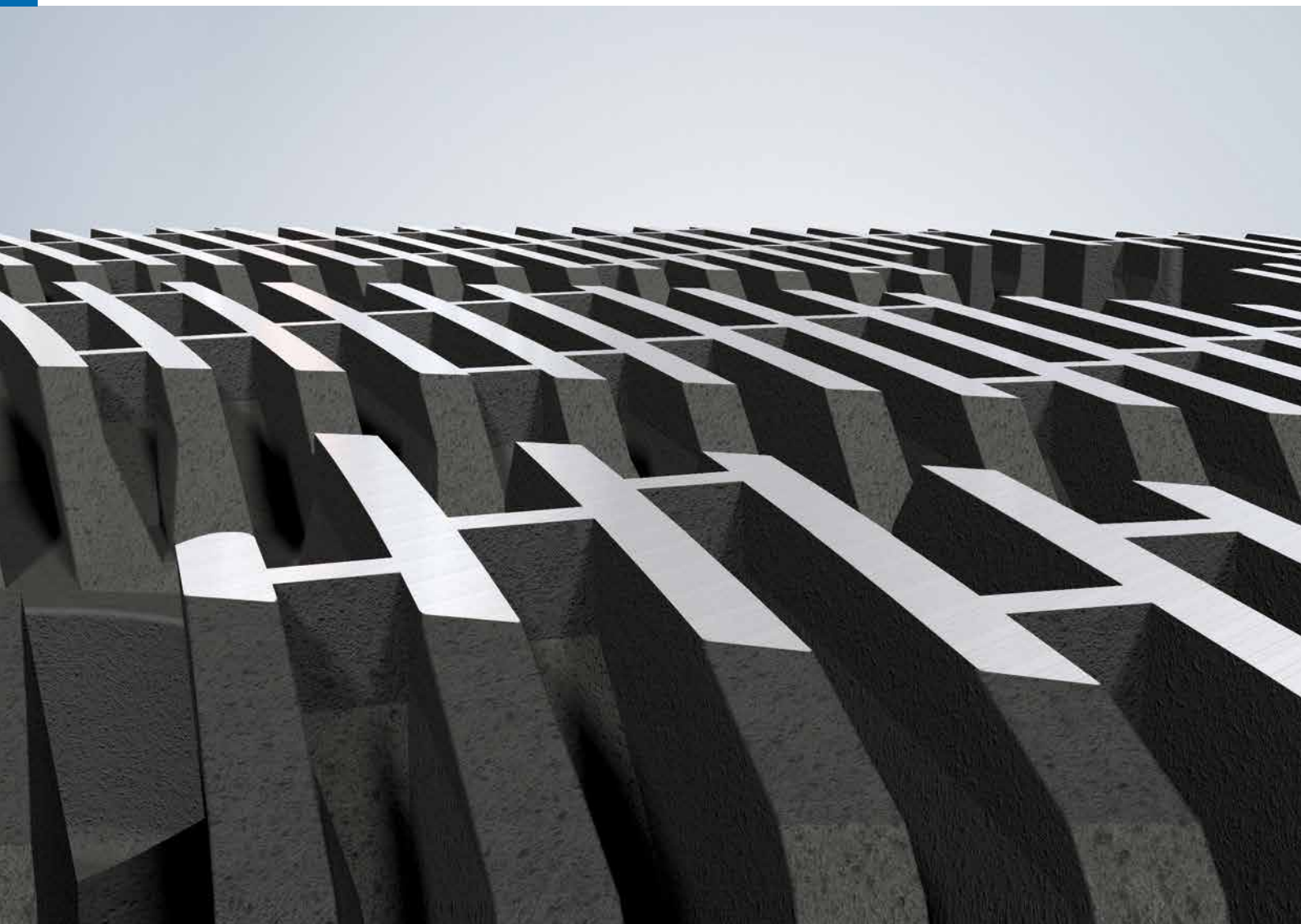


LemaxX and LemaxX Signature

At the cutting-edge of modern refining



Welcome

My name is Dr. Peter Antensteiner



As Global Vice President I am responsible for the development of our low consistency refiner plates.

Rethinking the art of refining. That was already my goal when I addressed the design of refiner plates in my doctoral thesis. Since then I have been able to significantly improve the efficiency and quality of refining together with my team at ANDRITZ. And there's still plenty to be done!

Take advantage of 20 years of systematic research and development work: Our latest solutions guarantee highest fiber quality, longer life – and lower energy costs.

JOIN ME ON MY WALKTHROUGH!

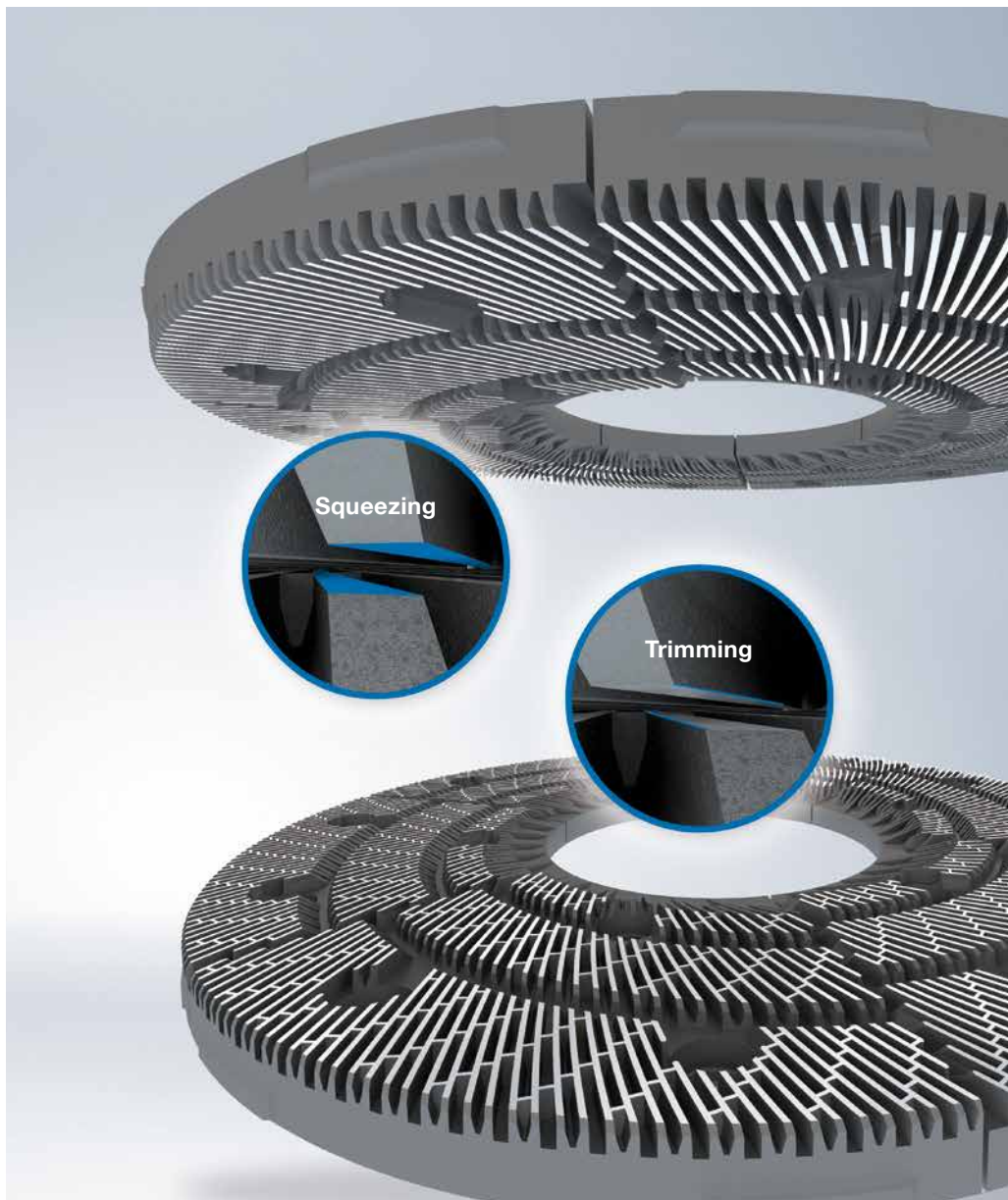
▲ Dr. Peter Antensteiner

The nature of refining

Knowledge as basis for success

Low-consistency refining is an essential step in paper manufacturing. Since fibrous material, produced from wood either chemically or mechanically (high consistency refining), is generally in need of further development to be suitable for the demands of current paper consumers (i.e. sheet forming, flock formation, sheet strength, etc.), mechanical treatments are applied to fibers.

In order to achieve the desired fiber quality development most efficiently and uniformly, the fibrous material is subjected to shear and compressive forces in the gap between rotating and stationary refining elements (bars).



Squeezing

Increased fiber collapsibility



- Greater bonding area between individual fibers

Increased bonding ability of fibers



- Greater unit area bonding ability of individual fibers through fibrillation
- Greater fiber compound bonding ability through secondary (sticky) fines

Trimming

Better flock formation



- Fiber shortening
- Fiber straightening

Innovation 1

Spiral bars

Motivation

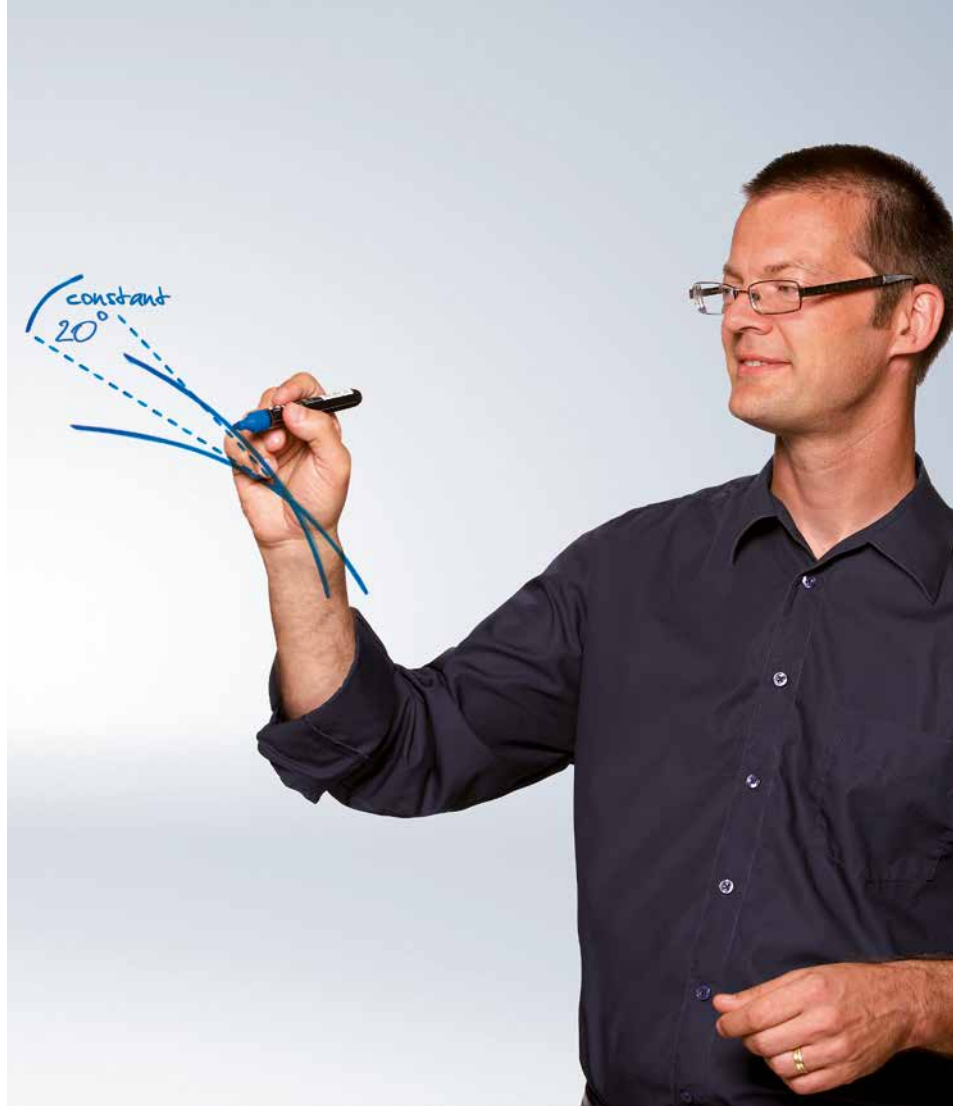
To ensure consistently high quality in the processing of fiber material, any form of process variability should be minimized. Research shows that bar angle significantly influences refining results. Yet the crossing angle of parallel bar plates varies significantly. So we asked ourselves: Can the shape of the bars be optimized to provide more homogeneous fiber treatments?

Idea

Ensure uniform crossing angles over the entire surface of the plate.

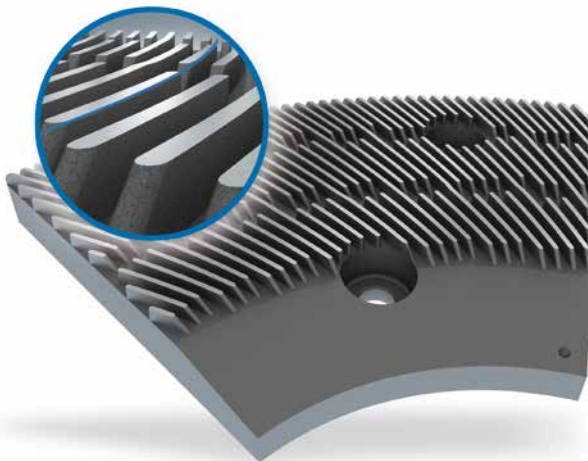
Solution

We gave the bars the shape of logarithmic curves. At any point, the fibers on the refiner plate are therefore refined at a constant crossing angle.



Advantage:

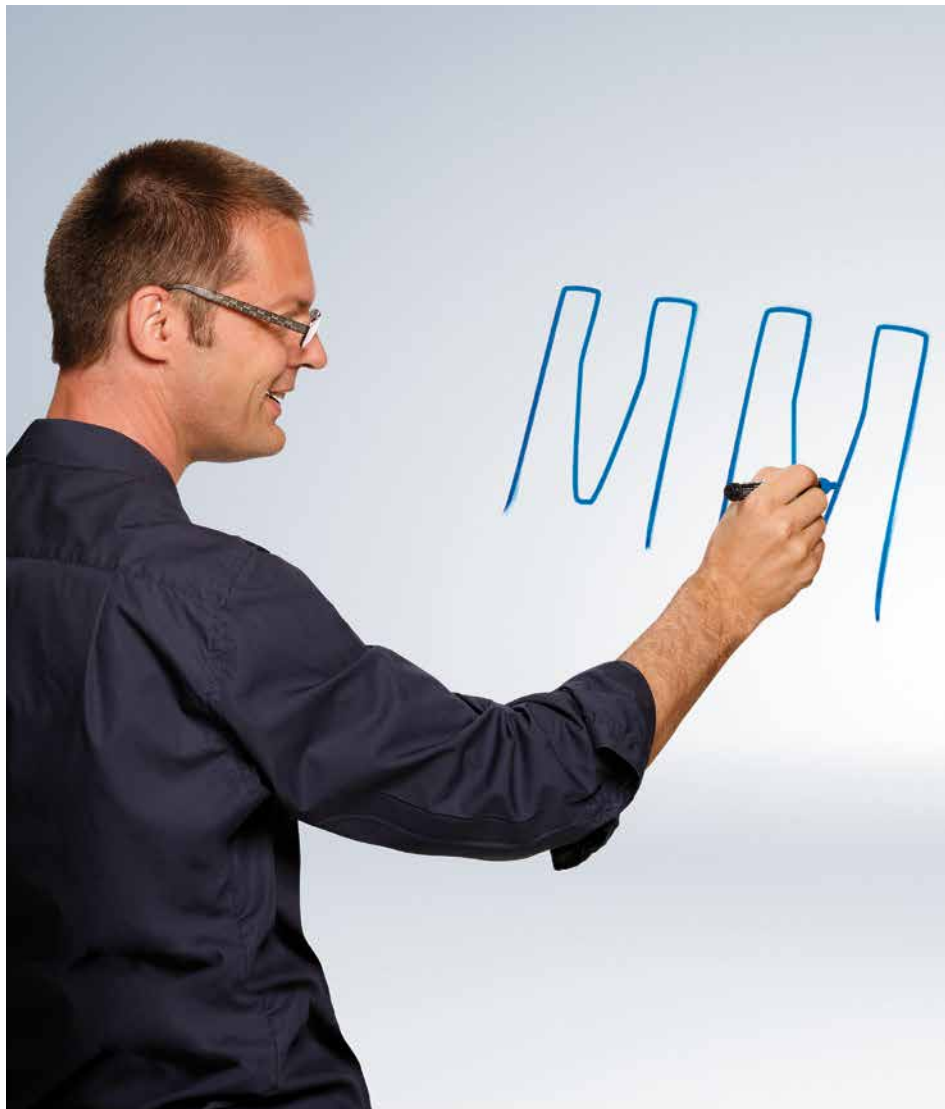
Homogenous fiber treatment and quality



▲ LemaxX 100 series

Innovation 2

V-shaped groove



Motivation

For minimal costs and set-up times, refiner plates are expected to have a long service life. But refining action and occasional tramp materials demand high toughness alloys, which naturally have lower wear resistance.

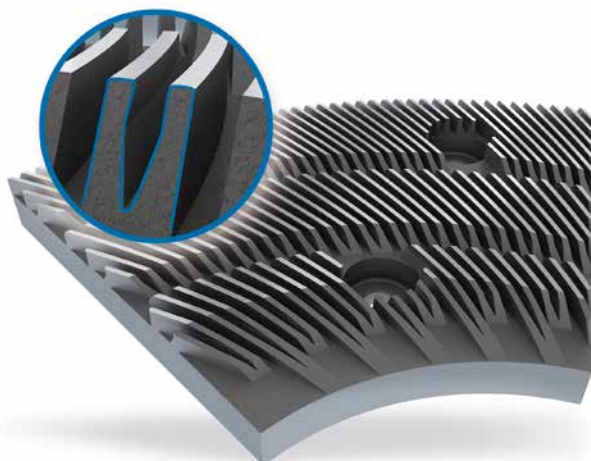
So we asked ourselves how we can use highly abrasion resistant alloys as a plate material while also withstanding the high mechanical load on the bars.

Idea

Increase the toughness of the bars by design.

Solution

We strengthened the bars at the base on one side. Two bars together form a V-shaped groove. The grooves between them are deeper and to compensate for the hydraulic losses of the V-shaped grooves.



▲ LemaxX 200 series

Advantage:

High durability/long service

Innovation 3

Strategically placed dams

Motivation

High process quality with increasingly efficient use of energy is expected. We asked ourselves how refiner plate design can contribute towards saving energy.

Idea

Improve the pumping characteristics and overall hydraulic behavior of the refiner.

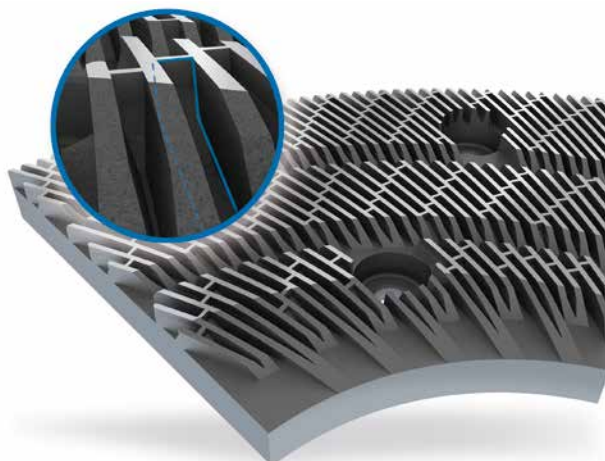
Solution

We developed refiner plates with strategically placed dams to prevent the back-flow of fiber material in the stator. This drastically reduces hydraulic losses and thus power consumption. At the same time we now can regulate the flow capacity by correctly placing dams in the rotor plate.



Advantage:

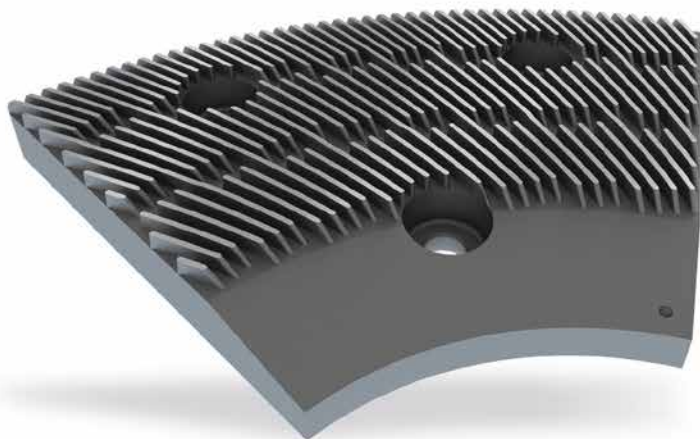
Reduced energy costs



▲ LemaxX Signature series

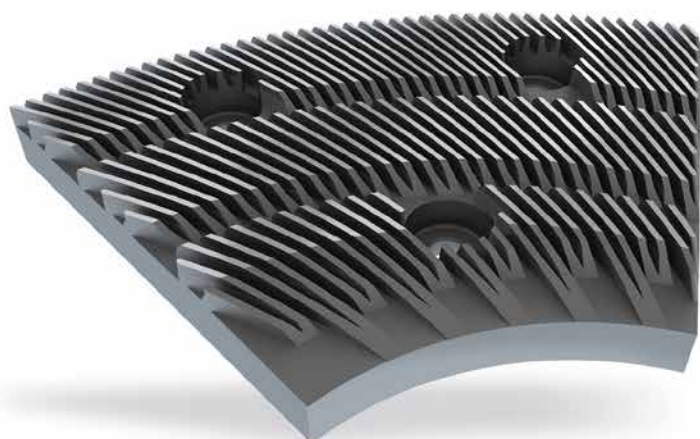
Combining design benefits

For highest productivity and quality



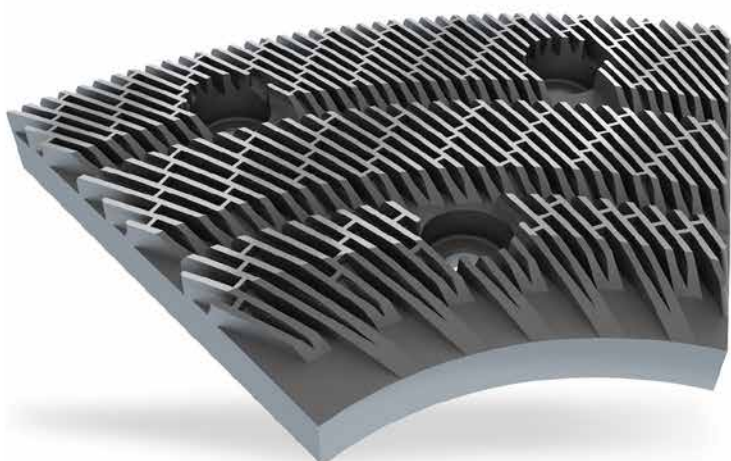
LemaxX 100 series

- homogeneous fiber treatment and quality



LemaxX 200 series

- homogeneous fiber treatment and quality
- high durability/long service life



LemaxX Signature series

- homogeneous fiber treatment and quality
- high durability/long service life
- reduced energy costs

MAGNUS savings calculator

Take advantage of rich and profound data

MAGNUS

We set up the extensive and unique MAGNUS simulation platform and database by using practical process analysis.

With MAGNUS, we can simulate and optimize your system, calculate energy savings and project fiber quality improvements.



Actual cost savings example

Contract Revenue for Andritz	\$	77.888
Current plate expenses	\$	89.871
Mill Plate Expense Savings	\$	11.883
Plate Change Savings	\$	1.600
Energy Savings Contract Period	\$	305.760
Annual Total Cost of Ownership Reduction	\$	319.343

I can personally vouch for that.

Peter Meusstetter

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