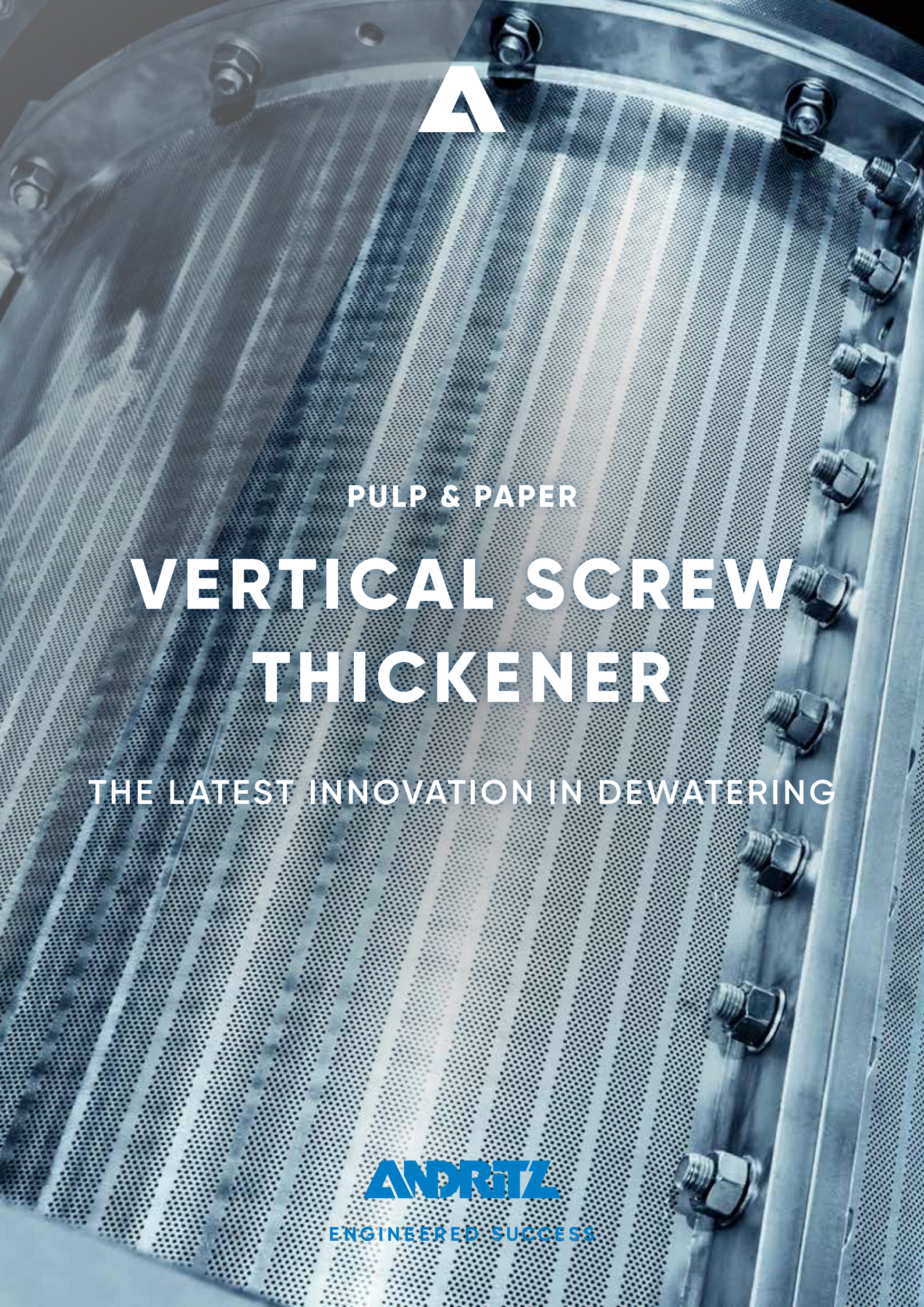


PULP & PAPER

VERTICAL SCREW THICKENER

THE LATEST INNOVATION IN DEWATERING

ANDRITZ

ENGINEERED SUCCESS

Increased throughput and discharge dryness

In simple terms, a Vertical Screw Thickener is a vertical configuration of the well-proven ANDRITZ Screw Press (SCP). The vertical design overcomes limitations that some screw press units have with lower feed consistencies in specific applications.

With over 500 units in operation, the ANDRITZ SCP is regarded as being top-of-the-line. Limitations of the horizontal design can be observed in applications with lower feed consistencies (e.g. 3-5%) however which reduce the throughput and discharge dryness of the pulp. The Vertical Screw Thickener (VST) was designed to overcome these limitations in specific applications.

LIMITATIONS TO THE HORIZONTAL DESIGN

The height difference between the top and bottom of the dewatering screen in an screw press creates a build-up of hydrostatic pressure in proportion to the diameter of the press. With lower feed consistencies, this pressure promotes uneven filtrate flows around the screen circumference and over the length of the dewatering screw. It also increases filtrate flow to the point where fibers can plug the screen holes and accumulate on the screen surface – reducing dewatering efficiency.

SEE THE TECHNICAL ARTICLE IN SPECTRUM

BENEFITS OF THE VST:

- Higher production – or higher output dryness at the same production – compared to a screw press of the same size
- Highest dewatering efficiency (particularly for low feed consistencies)
- 100% filling degree
- Uniform dewatering from top to bottom
- Small footprint
- Telescoping filtrate housing for easy access to screw and screens

100% FILLING DEGREE

The VST utilizes gravity to achieve 100% filling degree (100% of the screen area is used for dewatering). The VST has a rotating conical shaft with decreasing pitch to move the pressed cake downwards to the outlet casing. The pulp suspension is automatically and consistently distributed into the areas between the screw flights as it is compressed and dewatered. From top to bottom the filtrate flow around the complete screen circumference is very uniform.

VERTICAL DESIGN

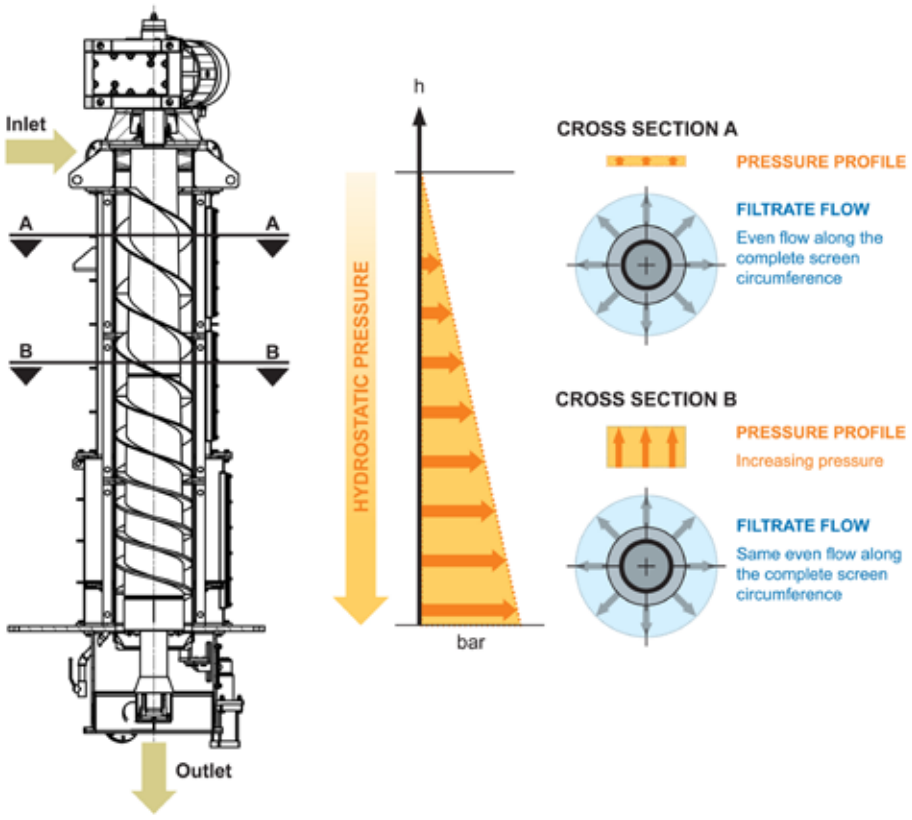
After evaluating options to address these limitations, ANDRITZ arrived at the solution of turning a horizontal SCP on its end and feed it from the top: the VST. Due to its vertical configuration, gravity evenly distributes the pulp suspension across the full circumference of the dewatering screen in the VST.

IMPROVED DEWATERING

Hydrostatic pressure increases from top to bottom of the VST. Unlike a horizontal design, this increased pressure actually improves the dewatering effect, since higher pressure is required as the pulp consistency increases down the length of the screw. The screw shaft has a progressive screw flight design, creating additional dewatering forces and resulting in extremely uniform dewatering around the complete circumference and length of the screen baskets.

FINE-TUNED DRYNESS

A pneumatically controlled counter-pressure ring builds up the pulp plug quickly after start-up and releases the pulp when the proper consistency is achieved. The ring pressure can be adjusted to fine-tune discharge dryness.



TECHNICAL DATA OF THE VERTICAL SCREW THICKENER:

ANDRITZ VST	322	453	604	754	1004	1005	1205	1405	1406
Screening area [m²]	2.2	3.8	7.1	8.8	11.8	15.7	18.8	21.1	26.4
Diameter [mm]	320	450	600	750	1,000	1,000	1,200	1,400	1,400
Overall height [m]	3.7	4.3	5.5	5.7	6.1	7.2	7.5	7.5	8.7

All data subject to change.

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