

## Advantage Yankee

Valmet Yankee dryer solutions



# World's only complete range of Yankee solutions

More than a century after it was invented, the Yankee is still the heart of the tissue machine. Nothing has surpassed it. Of course, technical development has been extensive. Modern Yankee cylinders are safe and reliable, and offer great performance along with energy efficiency. Customer needs have evolved, too, and not all tissue-making is the same. That's why we believe in providing the ability to choose: offering both steel and cast iron Yankee cylinders. And we are the only manufacturer that can do so. We also offer the most complete range of machines and solutions for tissue, paper and board manufacturing.

## **Our experience. Your advantage.**

More than 600 successful deliveries of Yankee dryers for different applications have given us tremendous experience and knowledge. We continuously develop designs, materials and manufacturing methods, as well as the Yankee drying and paper-making processes themselves. The key to success is the combination of experience, craftsmanship, modern technology and well-controlled processes. Feedback from skilled tissue producers is also essential to continuous improvement of our Yankee dryers.

## **Uncompromising safety and quality control**

As a central part of the tissue making process, the Yankee cylinder must be in good condition for the rest of the body to perform at its best. Safety, availability and performance in all areas from drying and pressing to creping are priority. Before delivery, we confirm and document the quality and properties via extensive material testing and non-destructive testing – all in accordance with Valmet standards, pressure vessel code requirements and customer specifications.

## **Strategic cooperation**

Whatever your target, we can help you achieve it. We work closely with our

customers in every phase. Combining your knowledge about the characteristics required for the end product with our expertise in Yankee technology yields profitable results to move your business performance forward.

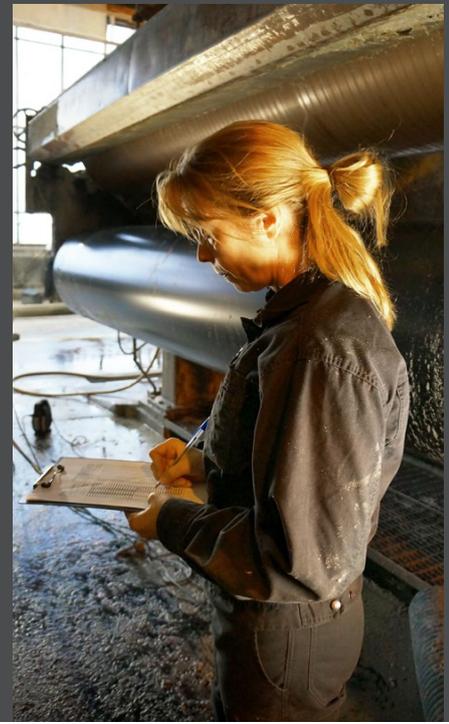
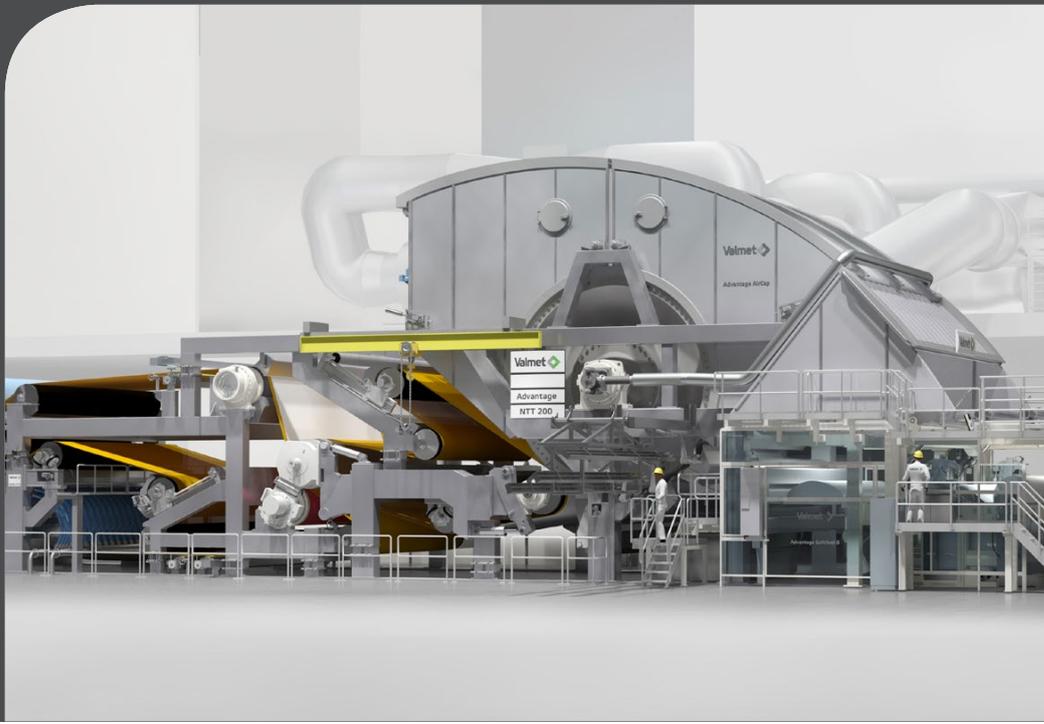
## **Smart logistics for flawless delivery**

We believe it is vital to have full control over the entire engineering and manufacturing process – from casting or welding to shipping, and every step in between. We find an unmatched quality advantage in having complete overview of manufacturing, all within a distance of less than 500 meters.

*From foundry to shipping within 500 meters. Yankee cylinders are shipped from Valmet's own harbor to customers all over the world. Having all resources close, from engineering to shipping, gives us unique control over the manufacturing process and quality.*







## The beauty of choosing a Valmet Yankee

The most important benefits of Valmet Yankee dryers come down to two words: proven and choice. Matched exactly to your needs, rest assured you have top safety, availability, long service life and excellent performance along with simple design, quality materials and high-precision machining and welding. Among our installed machines and Yankee cylinders are found the world's absolute fastest, most energy efficient and most productive. You can also count on unbeatable process knowledge and support with a worldwide service network.

### Defining your essentials

When choosing a Yankee dryer, it's important to focus on process compatibility, risk minimization, maximum output and utilization, while avoiding sub-optimization. Within each area, there may be a variety of ways to achieve these. For example, optimizing energy usage can involve maximizing the Yankee's drying capacity to minimize drying from the hood. Yet it can also involve making it possible to press with higher load to increase the dryness.

### Meeting specific process needs

In addition to principal requirements from the Yankee, such as safety and drying performance, there are also specific needs for different paper making processes. Conventional processes typically mean wide operating ranges and high pressing loads in combination with demands for uniformity and low vibration levels. Emerging hybrid processes, like the Advantage NTT technology for manufacturing textured tissue, as well as the Advantage ThruAir or TAD process for structured tissue, require the Yankee dryer to function at varying condensing rates, withstand high doctor loads and have a surface susceptible to specialized process chemicals.



# Compare the advantages: steel and cast iron Yankee dryers

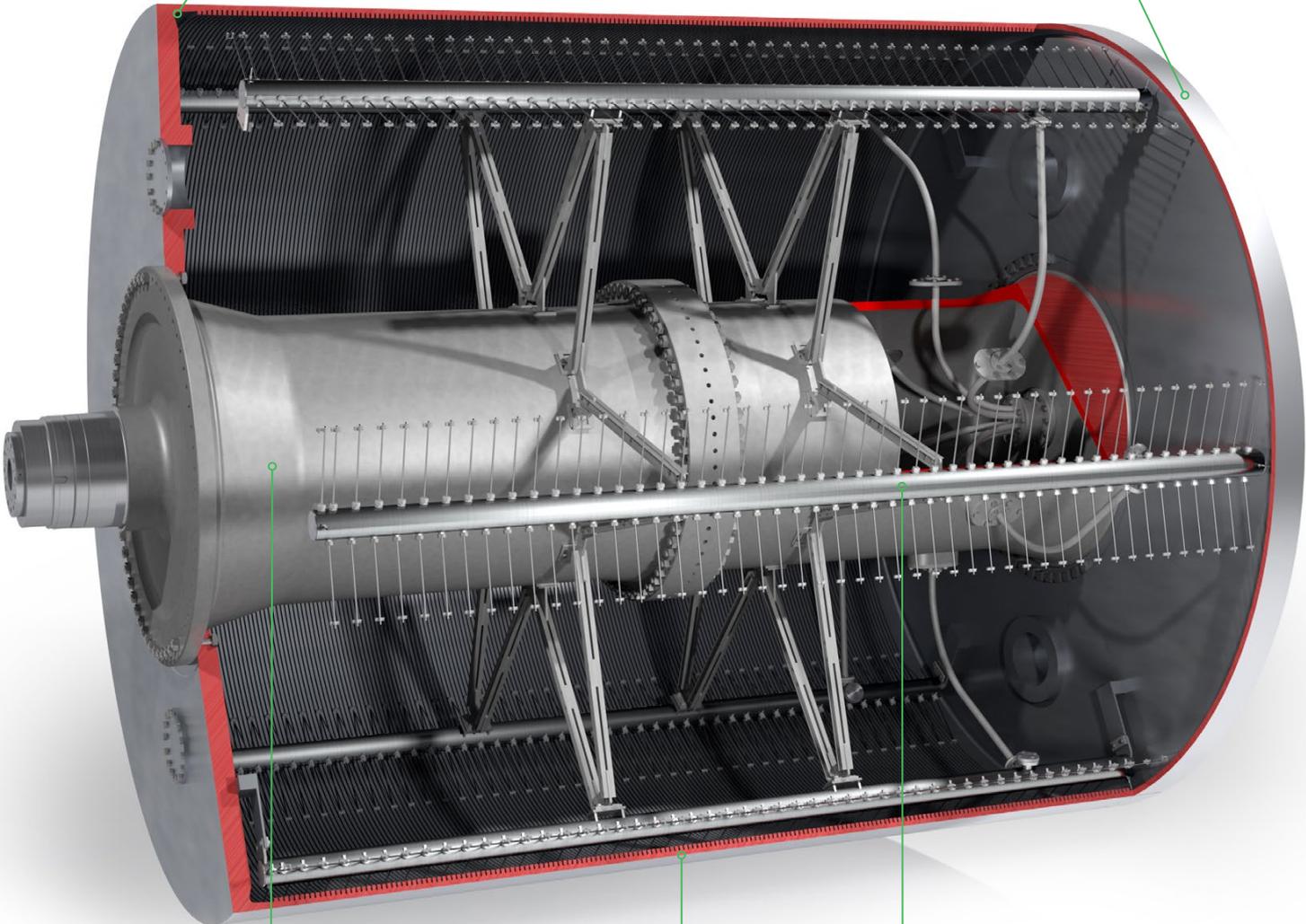
Drying capacity, energy savings and safety are, of course, important in Yankee selection. Yet there are other critical characteristics to consider when choosing a Yankee dryer for the paper machine and process. This comparison chart provides a quick overview to help you get started with defining your needs.

Feature	Steel	Cast	
Drying capacity (theoretical)	+++	++	Stronger steel allows for thinner shell, but can be compensated by deeper grooves for cast. Practical, process-dependent drying limitations.
Energy efficiency (theoretical)	+++	++	Relates to drying capacity. Drying more with Yankee reduces losses in AirCap. Yankee itself does not use less energy.
Safety	+++	++	Steel is generally a better material for pressure vessels. But design and quality are equally important. Valmet has an excellent safety record.
Surface properties (when metallized)	+++	+++	Both cast and steel shells are metallized with the same type of thermal coatings.
Surface properties w/o coating	N/A	+++	Cast iron provides a good papermaking surface as is. A steel shell is too soft and must be metallized for papermaking.
Long-term reliability and durability	+?	+++	Cast iron has been used and proven for over 150 years. Ribbed, steel dryers have been in operation for some 15 years.
Surface temperature uniformity	++	+++	High-quality cast iron is uniform with even properties. A high-quality welded shell has small variation between weld and plates.
Vibration damping properties	+	+++	Grey cast iron has excellent vibration damping properties, 10 to 20 times that of steel.
Corrosion and erosion resistance	+	+++	The free graphite of cast iron forms a barrier to corrosion. Steel has no free graphite and is more exposed to corrosion fatigue and erosion.
Maintenance and periodic inspections	++?	++	Well-established recommendations and methods for cast Yankee. Know-how for steel Yankee under development.
Process compatibility (TAD, hybrid)	+?	+++	TAD and hybrid processes utilize higher doctor loads known to quickly deteriorate metallized shells. Steel unproven.
High press load capability	++	+++	Very little experience in the industry with steel Yankee and high press loads. Steel is stronger but cast iron has good fatigue resistance.
Others (top speed, stability)	++	+++	Very little experience in the industry with steel Yankee in top-speed tissue machines.

# Advantage Yankee Steel

Extensive quality control including 100% ultrasonic testing of all structural welds

Optional head insulation for improved energy efficiency, better working environment and increased safety



Super-rigid through-going journal – the hallmark and backbone of a high-performance Yankee dryer

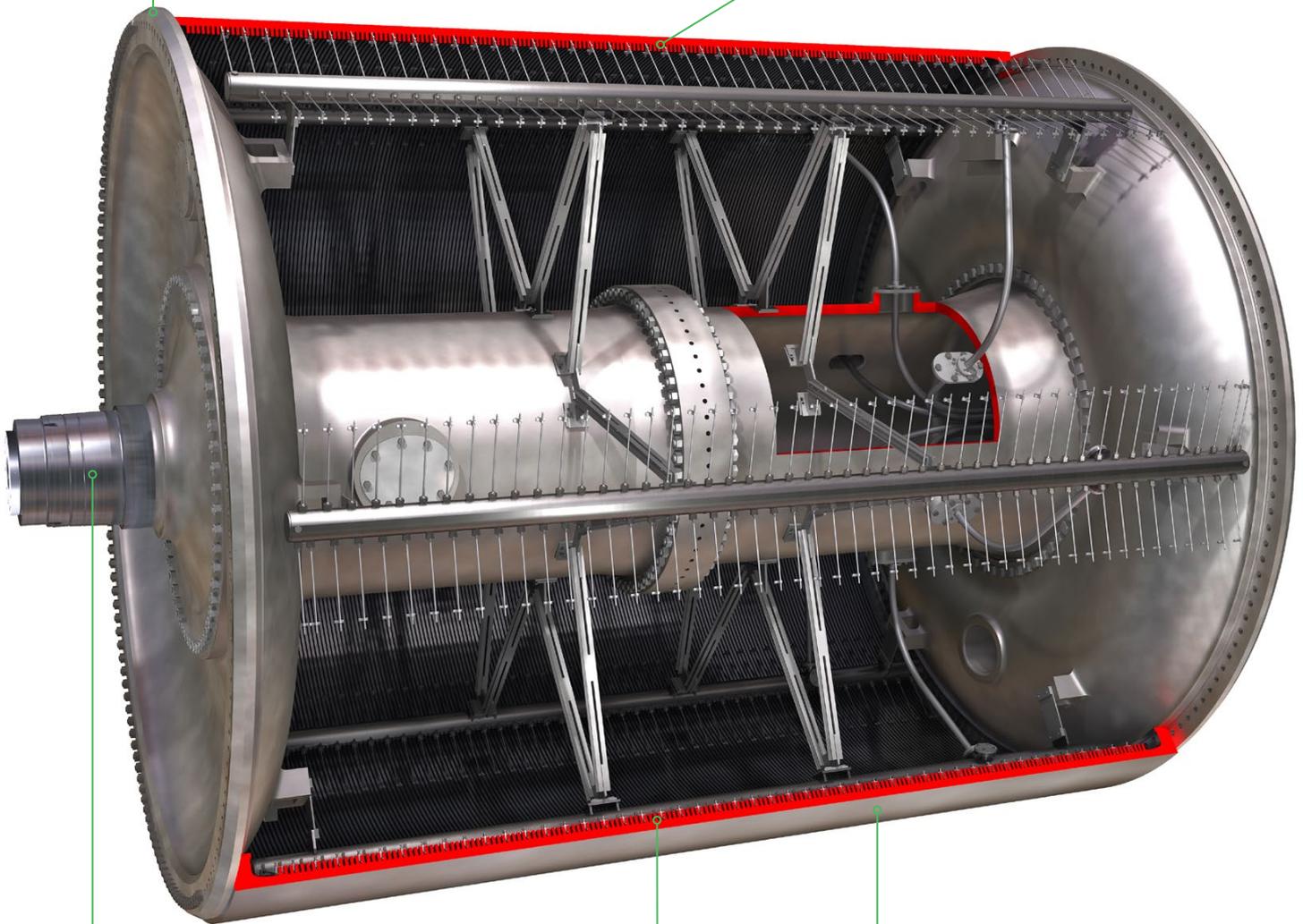
Well-proven internal systems for efficient and uniform condensate removal

Market-leading Infinikote™ and Valmet HS600™ thermal coatings for optimized surface properties

# Advantage Yankee Cast Iron

Optimized flange connections with ample through-going boltings and no gaskets, for a tight fit that eliminates the risk of steam leaks and crevice corrosion

Extensive quality control including 100% ultrasonic inspection and supplementary radiographic inspection of casted shells



Single-wall, stainless steel insulating sleeves to protect the bearings – excellent function and easy maintenance

Optimized shell geometry for high and even heat flow as well as high nip load capability

Special Yankee cast iron alloys – developed for high strength, conductivity, uniformity and wear resistance

# Optimum performance with proven technology

Valmet's Yankee dryers are developed for safe, reliable and high-performance operation in every detail. Imagine the possibilities for performance when you gain access to industry-leading technology.

Advantage Yankee S and C Yankee dryers are an important part of all major Valmet concept families for making tissue paper – from conventional dry and wet crepe to the so-called hybrid technologies and Thru-Air drying machines.

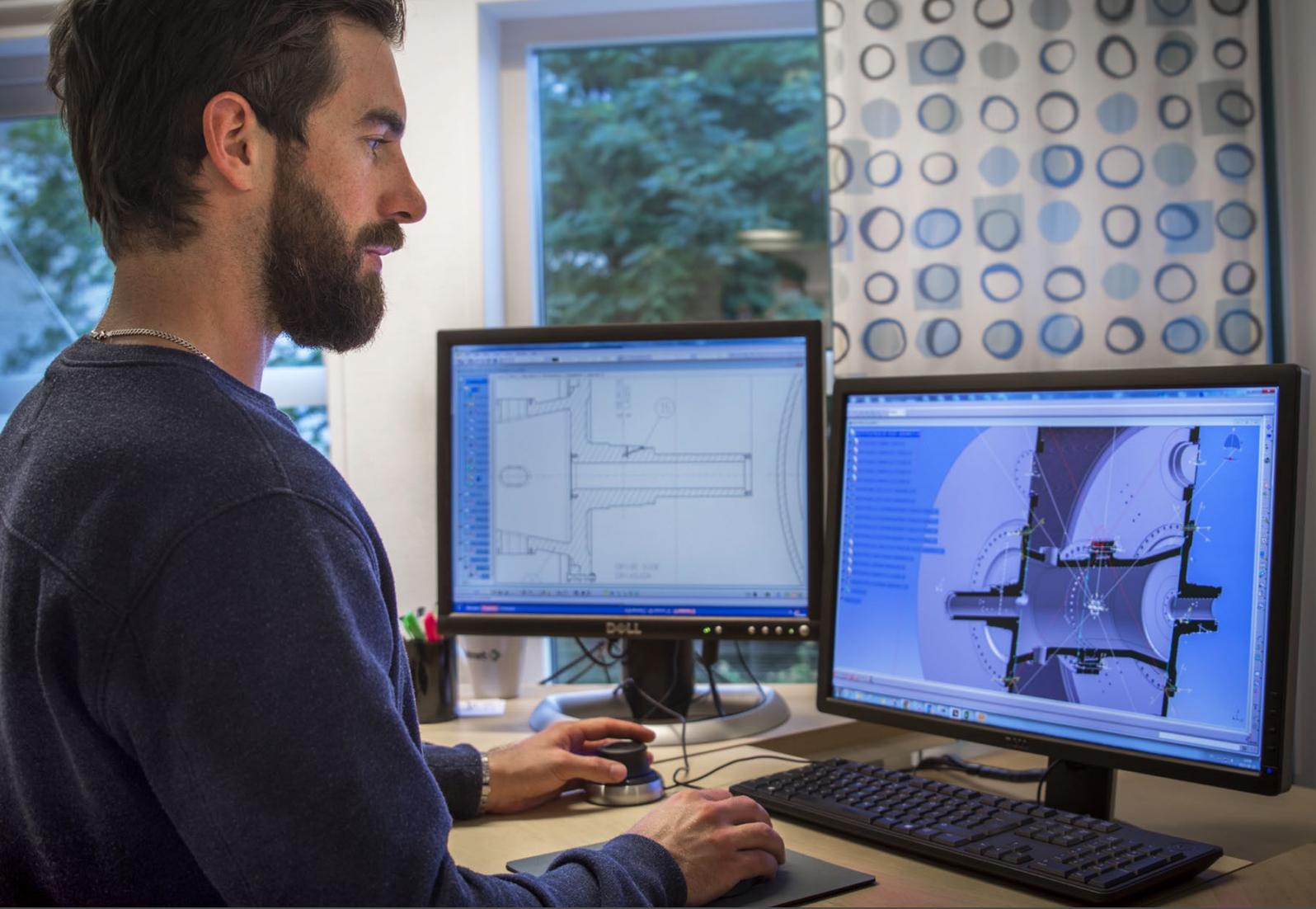
They are also the perfect choice as a standalone replacement for upgrading safety and reliability, increasing capacity or optimizing energy consumption of existing paper machines. For added benefits, you can combine them in an optimized package with Valmet's Advantage ViscoNip press or Advantage AirCap Yankee hoods.

- Optimized shell geometries for high and even heat flow, as well as high nip load capability.
- Well-proven internal systems for efficient and uniform condensate removal that minimizes thermal deformations and surface wearing and results in a more uniform sheet, including:
  - Tapered, long straw pipes with spherical joints and holders for both flexibility and accurate adjustment
  - Curved riser pipe and siphon pipes for minimized pressure loss
  - No sliding joints or gaskets for improved reliability and reduced maintenance.
- Surface properties optimized depending on specific process requirements. Special cast iron alloy, cast iron or steel shells coated with Infnikote™ or Valmet HS600™ provide uniformity, well-defined roughness, hardness and durability against mechanical or chemical wear. A specialized, encapsulated grinding machine in the Valmet workshop gives a precise and controlled environment for consistent, high-quality application of thermal coatings while preventing environmental pollution.
- Super-rigid through-going journals – the hallmark and backbone of a high-performance Yankee dryer.
- Journals equipped with single-wall, stainless steel insulating sleeves to protect the bearings – a robust design offering excellent function and easy maintenance.

- Optimized weld and/or screw joints without gaskets between pressure-containing parts for reduced stress levels and high reliability.
- Strict quality assurance, including 100% ultrasonic testing of casted Yankee shells and 100% ultrasonic testing of all structural welds.
- Head insulation reduces thermal losses, protects and prevents dust from building up on the heads for improved energy efficiency, better working environment and improved safety; designed for easy handling and access for dryer inspection.
- Auxiliary equipment such as bearings, rotary joints and drives from leading suppliers.
- Design and manufacturing fulfills and exceeds requirements per valid pressure vessel codes such as ASME, PED, CSEI and JIS.



*The patented Advantage ViscoNip press offers great flexibility and remarkable results with regard to uniformity, reduced energy and fiber consumption and sheet properties. Excellent for rebuilds. Match with an Advantage Yankee in order to utilize its full potential.*



# Yankee Service to extend lifetime

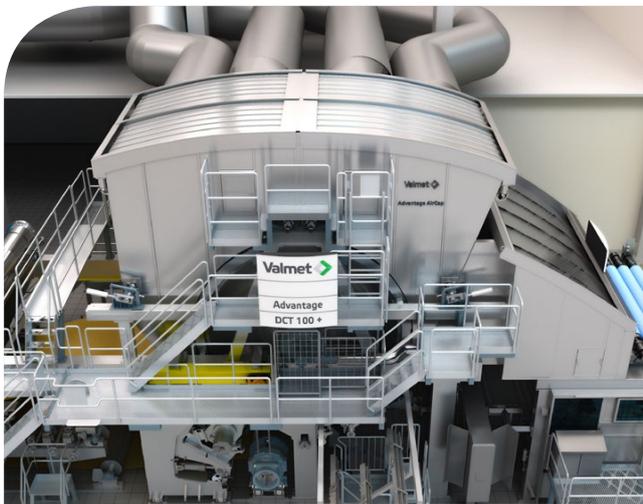
Valmet offers not only superior technology, but also lifetime service and support. Preventive Yankee Service ensures high Yankee dryer performance throughout the cylinder's lifetime, minimizing unplanned stops and reducing maintenance costs. With a worldwide service organization of more than 100 service centers, we are always near at hand.

## Maximizing uptime

Yankee service support includes inspections, analyses and condition tests to maintain safe, efficient production and prevent unplanned shutdowns and production disturbances. You also have rapid delivery of spares and quick response for unplanned repair work when needed.

## In-depth safety inspections

Trusted by authorities and insurance companies, Valmet's safety inspection program is based on firsthand experience in manufacturing and acceptance-testing of Yankee dryers. We also work according to established industry recommendations and practices such as those promoted by TAPPI. Inspections include routine checkups, fitness-for-service and various non-routine assessments.



*Advantage AirCap and Yankee. The unbeatable drying system. The drying process is intensive and energy consuming. Valmet's energy-saving studies help identify potential improvements to decrease energy consumption and minimize losses in your yankee drying system.*

## Enhanced performance

The Yankee surface is critical for tissue-making. Even small marks on the surface can cause severe damage to the paper web. Valmet is a leading supplier of solutions for removing chatter marks and refurbishing the Yankee shell. You can also choose more advanced actions like thermal spraying of our state-of-the-art coatings and on-site profile grinding.

Other performance-enhancing services include: crown optimization studies, press load calibration, doctor set-up and profiling, and steam and condensate system audits, inspections or diagnostics. All conducted by Valmet's designated specialists.

## Profitable energy savings

Valmet's performance enhancement also includes energy-saving studies. The Yankee drying process is intensive and energy consuming. Our specialists measure drying performance and energy consumption to benchmark against our extensive collection of performance data from similar installations. This valuable information helps identify potential improvements to decrease energy consumption and eliminate losses in your Yankee drying system.

## Upgrade to the latest

Benefit from the latest Valmet technology by retrofitting the internal condensate removal system, insulating sleeves or bearing assemblies. Increase drying performance by installing spoiler bars or reduce energy losses by installing head insulation. Valmet offers a wide range of upgrades or rebuilds for all types of Yankee dryers.

## Vital training

Lifecycle support is not only about machines. It also concerns special resources for training at our full-scale test center or via e-learning, an interactive way of educating and updating mill staff about how Valmet Advantage Yankee dryer solutions function in the tissue-making process.





## The global leader in tissue making

Over 120 years of experience within the pulp and paper industry has resulted in Valmet becoming the global leader in tissue making. We deliver the most production capacity with the largest installed base of tissue making machines worldwide.

We strive to ensure that tissue quality, knowledge and process technology, as well as our wide scope of service, continue to drive mutual success.

Let's move forward to become Best in Tissue!

### Contact us

Valmet AB, Karlstad, Sweden  
Tel.: +46 54 171 000

Valmet S.p.A, Gorizia, Italy  
Tel.: +39 0481 528 311

Valmet Inc, Biddeford, USA  
Tel.: +1 207 282 1521

Valmet Inc., Norcross, USA  
Tel.: +1 770 263 7863

Valmet Ltd., Beijing, China  
Tel.: +86 1065 6666 00

e-mail: [tissue.info@valmet.com](mailto:tissue.info@valmet.com)

[www.valmet.com](http://www.valmet.com)