





Produce the highest quality tissue using less energy

Valmet's revolutionary Advantage NTT technology offers high tissue bulk and softness properties while at the same time providing additional energy savings when compared with conventional or structured tissue grades. The high bulk can also mean significant fiber savings.

The best of both worlds

The NTT machine can operate in two different modes, one producing textured products with high bulk, the other as conventional mode making products similar to conventional dry crepe DCT.

Quick changeover of the NTT machine is important for tissue producers building a market for highbulk products as well as for those producing conventional tissue in a very energy-efficient way. The process is ideal for making bath tissue, facial and hand tissues, and kitchen towels. A high production rate of 1800 m/ min for textured products and 2000 m/min for conventional products can be achieved.

High-quality products

Advantage NTT technology need not involve calendering. The increased

softness can be achieved by the higher contact area against the Yankee dryer, and it is possible to design the belt having a contact area in the range 40-70%. The higher contact area improves tissue softness as the surface area is exposed to more creping. Numerous panel and Emtech softness analyzer tests have proved that this production line gives a high level of softness.

The textured mode produces a high stretch, which is a good indicator that the crepe process is working well. High stretch also indicates high softness due to reduced stiffness/ increased drape of the sheet.

Fiber savings in a better product

With the NTT process it is possible to reduce the weight of the finished roll. The 50-80% increased bulk makes it possible to maintain the roll diameter and roll firmness, but to have lower sheet count in the roll. The roll weight can thus be reduced by 20-25%. Furthermore, the high bulk can also be used to improve surface softness by calendaring if required, making this feature ideal for the best quality toilet and facial tissue.

Greater production optimization

Valmet can make further contributions to production optimization because we take the complete mill design into account, from raw material intake to reeled product. We have made processing a closed loop where water derived from tissue sheets is returned to stock preparation; where all components are dimensioned to minimize the use of energy and water. Such optimization results



from our long experience with the tissue making process, our knowledge on the performance of independent units that make up the production line, and our desire to recycle materials and reduce operational costs.

Our application expertise is complemented with personnel with a high degree of proficiency in their respective fields who are strongly committed to driving success. They make a difference by being totally engaged in improving all aspects of tissue making and striving to satisfy the individual needs of tissue manufacturers worldwide.

Achieving higher uptime together

Always supporting the customer and flexibility in finding working solutions together are key ingredients in approaching 100% uptime with a Valmet line. As we are a big company and the leading supplier, we are here to stay and have the resources to take care of all types

of tissue makers. And we're always within easy reach.

A service that we can offer which is becoming increasingly important is remote support. This involves gaining access to your process parameters via the Internet and telemetry in order to check the running conditions of your tissue making equipment and helping to resolve any problems you have.

Lower operating costs

When comparing total operating costs in different tissue making machines, Advantage NTT technology is a true winner.

In both textured and plain modes, this Valmet technology achieves lower energy consumption, and it enables tissue makers to introduce new high-quality products manufactured in a very cost- and energy-efficient way.

A full-scale Technology Center to help you

Valmet constantly strives to advance tissue making for the success of our customers.

An important aspect of this is our Tissue Technology Center in Karlstad, Sweden, which gives you access to two full-sized, flexible pilot machines, a well-equipped and organized laboratory and a unique spectrum of expertise on tissue machines and manufacturing processes. That's why there's no better environment in which to test your products and processes under strict confidentiality.



Meet the constantly changing needs of the tissue market

The Advantage NTT technology process is a completely new concept in tissue manufacturing using state-of-the-art and proven machine technology combined with the latest belt technology for paper machine clothing. With the flexibility of Valmet's Advantage NTT technology, the tissue producer now has the possibility of developing new products to meet the constantly changing needs of the market.

The compact NTT tissue machine sections that impart the unique qualities on either plain or textured tissue, and increase your machine speed and production capacity, are shown below.

The forming section

is in principle an upside down Crescent former, where the forming is between a felt and a forming fabric, with all the known benefits from this technology, including a sheet with excellent formation from low basis weight products like facial to high basis weight towel. The forming section has only 4 rolls and its water-handling system is of the latest high-velocity design with reduced size of the save-all tray and overall forming section.

The 2-layer OptiFlo II TIS headbox

provides the best formation and sheet softness. Its turbulence generator is of the latest hydraulic design and high flow velocities in the nozzle avoid chemical build up. The headbox can be supplied with a dilution system that reduces CD basis weight variations by almost 50%.



The press section

is positioned as a separate unit prior to the Yankee dryer. It consists of 2 loops, the felt loop and the NTT belt loop. The felt runs through a shoe press nip transferring the sheet to the NTT belt. Simultaneously it acts as press felt receiving the water pressed out from the sheet.

The SymBelt shoe press

and a counter roll enable a longer dwelling time and a bigger press impulse compared with a roll press, thereby improving sheet dryness after the press. In the press nip, sheet dryness is increased to 44-47% while the sheet is pressed into the NTT belt structure and creates the texture.





Either fine, medium or coarse belts are used to give products the desired textured surface. Alternatively a plain belt can be used. The sheet runs after the SymBelt press to the Yankee and a press roll is only to transfer the sheet to the Yankee at a relative low linear load.



The Yankee section

consists of an 18-foot cast grooved Yankee with insulated heads to minimize thermal losses. The hood and air system make up the latest Advantage Aircap design driving the hood temperature up to 550 °C and maximizing the drying area. The top part of the hood is sloped to reduce dust build-up. Automatic cleaning showers on top of each hood periodically run to keep the roof clean.

Three Yankee doctors

designed for a higher linear load than conventional machines incorporate a special type of coating and chemicals that withstand the loads of Advantage NTT technology. The advanced coating system consists of a coating shower enclosed in a Gluebox that is designed to capture and handle any coating mist.

Reel section

The Advantage SoftReel B integrated in the dry end is a completely new winding system that meets tissue makers' demands for improved efficiency and quality in production and converting operations. Winding on the SoftReel B belt is gentler and absorbs vibration, which improves the control of the winding process and allows production of large-diameter parent rolls while keeping a more uniform caliper throughout the complete roll.





Machine capacity

The NTT production line can be supplied in different machine widths from 2.8 m (NTT 100) up to 5.5 m (NTT 200). There is no mechanical limitation for supplying wider machines. In the NTT textured mode the estimated maximum machine speed is 1800 m/min. In the conventional mode it is possible to run faster and the machine is designed for 2000 m/min. The NTT conventional mode will have the highest production capacity of 245 t/day at 100% machine efficiency of 22 g/m² toilet tissue.

Excellent dust control

Valmet's dust control concept for all Advantage technologies captures dust where it is created to minimize the risk of fire, provide a healthy work environment and reduce manual cleaning.



Optimizing life cycle performance and economy

To ensure you get the best out of your tissue making solution throughout its life cycle, Valmet provides a range of services to help keep machinery in peak condition. In addition, process support and project execution services maintains smooth installation and uniform production. The training courses enhance the skills of mill personnel to achieve a higher standard of operation

Protecting your investment

Over the years, several surveys have confirmed the correlation between proactive maintenance and profitability. The results are unmistakable: proactive maintenance is profitable. If maintenance is reactive, mill personnel have low or limited control over production output and maintenance and production costs. Machine uptime will also decrease over time.

Our total range of service products benefits your mill operations through:

- Access to world-class expertise and problem solving based on hundreds of machines worldwide.
- Valmet Service Agreements covering maintenance and service.
- Fast payback through cost-effective solutions with no wasted time or effort.
- Profitability analysis that enables you to find out where your money is being made or lost.
- Cutting-edge technology that offers long-term added value. Fewer costs and less worry are gained thanks to expert management of spares and rolls.

- Collaborative partnership for problem solving.
- Total range of services from feasibility studies to rebuilds and upgrades.

Project management

Valmet's standard offer includes coordination of engineering and procurement, manufacturing and pre-assembly, shipping and installation supervision, as well as commissioning and start-up. With our extended offer, we also take care of total project coordination for the complete tissue making mill.

Training enhances skills

Valmet provides training courses, involving specialists and experts in many fields, at our learning center in Karlstad, Sweden. These cover essential areas in tissue making production like stock preparation, the tissue machine, runnability, maintenance and environmental issues.

Safety an everyday mindset

Safe working environment and products are essential and considered in every step of Valmet's technology development. All our products and technologies fulfill safety regulations according to requirements in the European directives as well as other specific regulations or requirements agreed with our customers.

We provide solutions to establish a safe and healthy working environment that can avoid accidents, improve efficiency and reduce costs. For our tissue experts safety is an everyday mindset and with our vast experience and know-how we can offer tailor made safety upgrades and solution for all tissue making technologies.

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Contributing to a more sustainable world

Care of the environment is not mere theory but a practice that is highly integrated with our everyday activities worldwide. Not only our efforts reduce the impact of our tissue making solutions on the environment, but they also contribute to reducing energy, raw material consumption, greenhouse gas emissions and running costs for tissue makers. Below are just some solutions resulting from our R&D strength that show you how Valmet contributes to more Eco-friendly tissue making through Best Available Technology

OptiFlo II TIS energy saving

Improved formation can be used to reduce headbox flow by up to 20% giving an energy savings potential of 40-60 kWh/ton paper depending on machine speed for certain grades.

Saving water by optimization

Water is a crucial resource in the paper making process and high let-outs have traditionally been an environmental problem for paper mills. By systematic optimization throughout the entire tissue making process, Valmet has reduced water consumption to a minimum of 4-5 m³/ton tissue.

Heat recovery systems

Optimized solutions to recover heat from the Yankee hood exhaust air are primarily based on air-to-air, indirect air-to-water and direct air-to-water heat exchangers. All heat recovery systems are specially designed for the tissue process to operate at high efficiency and with low maintenance.

Yankee hood and air system

A new state-of-the-art Valmet Yankee hood and air system generate remarkable energy savings through:

- Optimal distance between hood and Yankee cylinder in all operating conditions
- High-efficiency heat transfer in cross nozzle boxes
- Customized engineering and equipment selection to reduce emissions and improve drying efficiency.

Yankee head insulation

About 70% of the energy used in a mill goes to the drying process, Yankee dryer and Yankee hood. By insulating the heads, steam consumption is reduced by up to 80 kWh/ton tissue and insulation plates prevent the accidental spraying of water on a Yankee dryer and dust build-up. Thus, in addition to energy saving, the working environment is cleaner, safer and less hot.





The global leader in tissue making

Over 150 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.

Join us to become Best in Tissue!

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