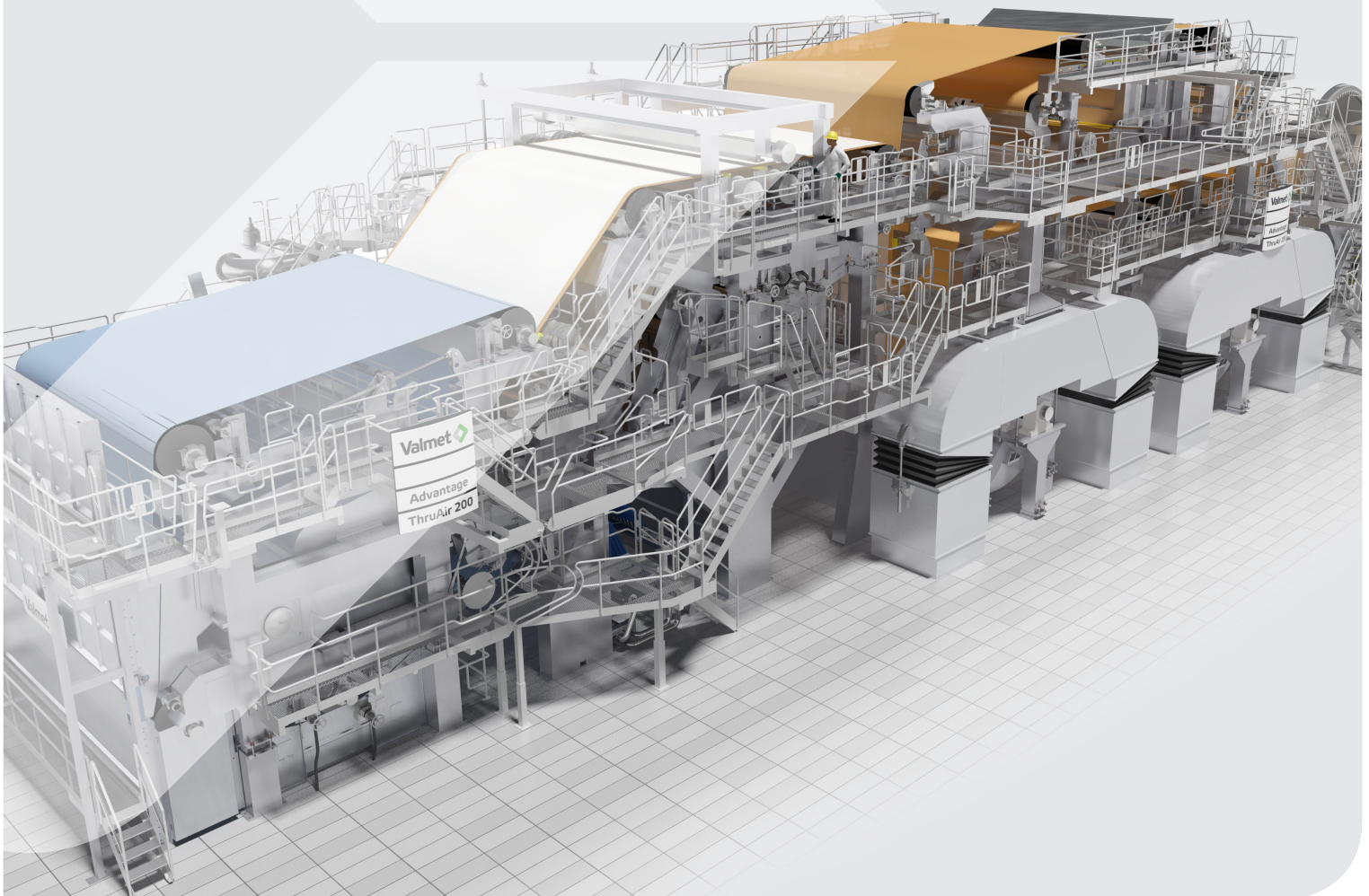


Advantage™ Thru-Air® Technology

Supreme quality tissue with unbeatable
absorbency and softness





The preferred choice for consumers worldwide

The use of tissue products has become an indispensable part of everyday life for millions of people around the world. No matter where they are used - in the home, at work or in the countryside - consumers enjoy the convenience of tissues and their aesthetic and physical properties. Distinctive appearance, softness, strength, bulk and absorption are all highly valued. Valmet's Advantage Thru-Air (TAD) Technology provides these desired quality properties and TAD products have now become the preferred choice for consumers worldwide. The Advantage Thru-Air family caters for all production volumes.

Greater bulk and softness with less fiber

Consumer demand has led to an impressive growth in the quantity and variety of ThruAir Drying (TAD) products on the market. The TAD process delivers a product that is softer and more absorbent than conventional technology allows; characteristics that consumers really value.

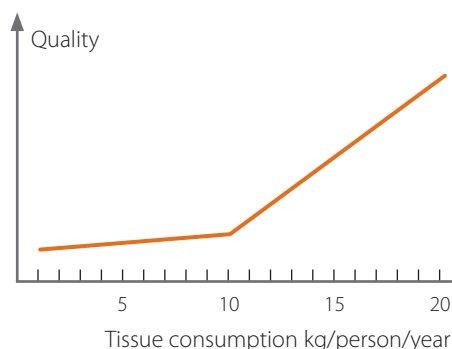
Single or multi-ply products

Advantageous drying rates in the TAD process allow a wide range of basis weights to be produced at high machine speeds. Therefore you can manufacture multi-ply products or reduce the number of plies while increasing your production rate and capital efficiency.

Consumers prefer TAD products

Upgrading of quality is an extremely important driver of tissue demand at a later phase of tissue consumption development. This may be seen at per capita consumption level of some 5-6 kg/person/year, but becomes a very distinctive development factor after

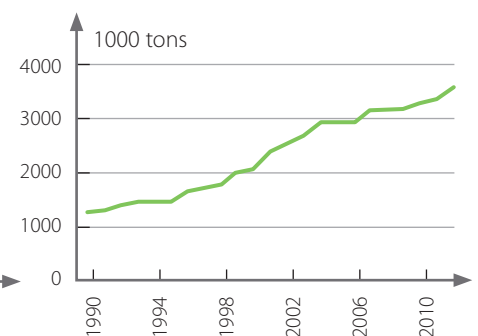
Tissue consumption development



10-11 kg/person/year consumption has been reached. Multi-ply sheet structure, TAD and advanced fiber technology play key roles in achieving higher tissue quality.

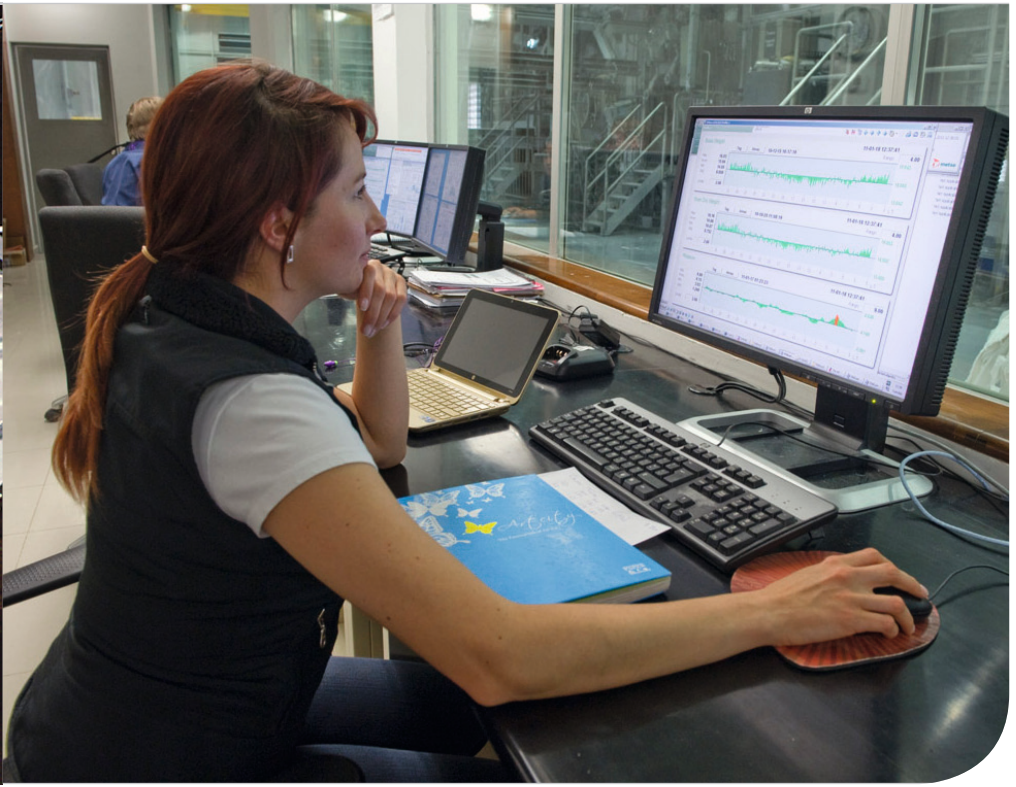
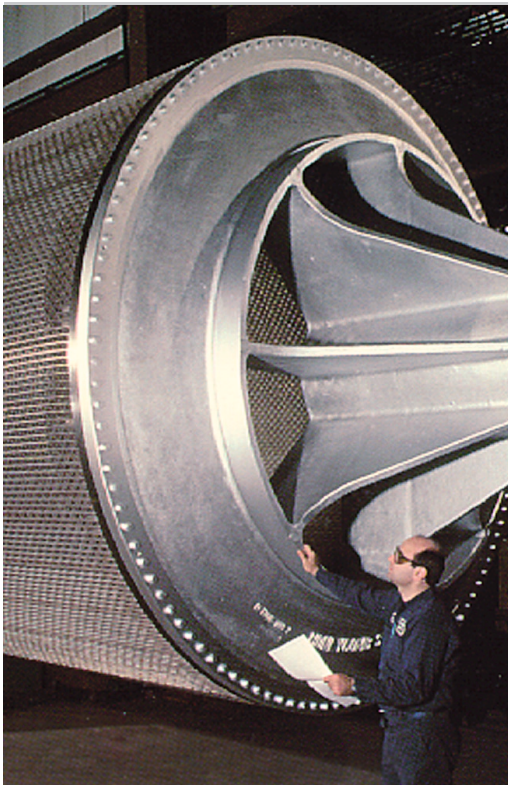
The total world TAD capacity (in 1000 tons) from 1990 to 2011 is shown in the diagram.

Consumption of TAD tissue



Higher quality becomes increasingly important after a tissue consumption of ca. 10-11 kg/person/year.

The consumption of TAD tissue has been continuously increasing over the years. (Source: RISI 2012)



Achieving higher uptime together

Achieving the highest uptime needs a joint approach and we are always available, flexible and ready to work with you to find winning solutions. We are the leading supplier with the leading technology and have the resources to provide outstanding customer support. The use of remote support in which your process is remotely monitored, via a secure Internet connection, by our experts can lead to very rapid solutions.

A full-scale Technology Center to help you

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

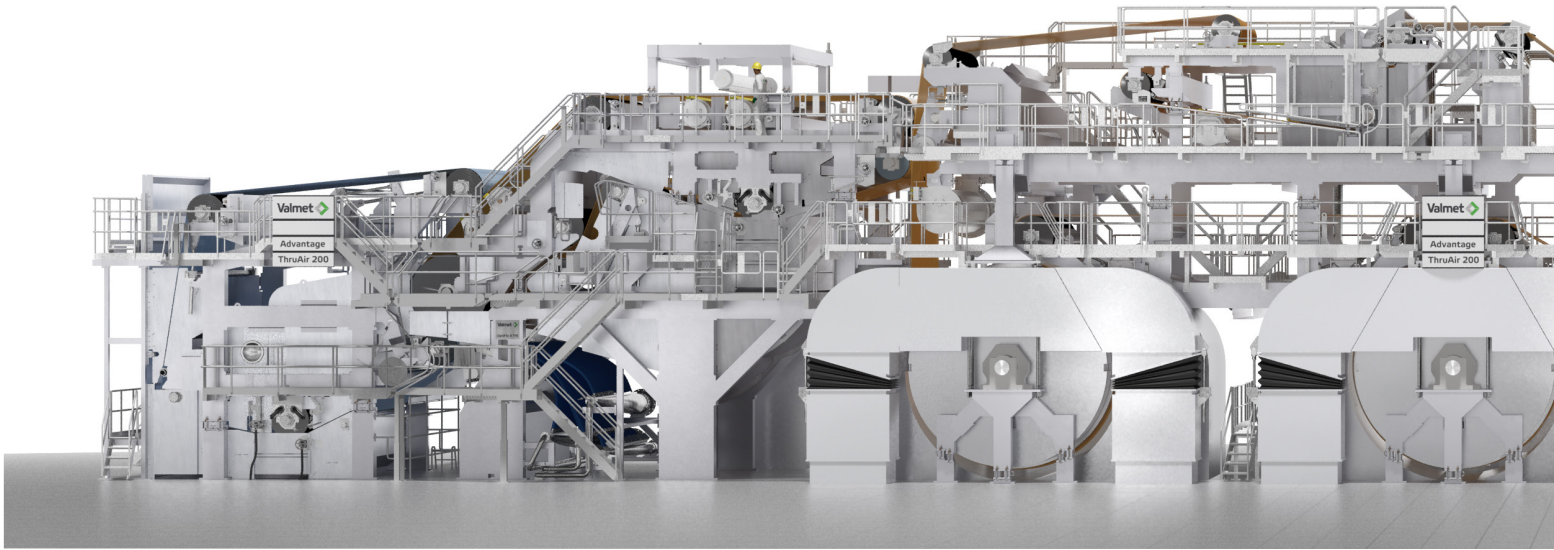
An important aspect of this is our Tissue Technology Center in Karlstad, Sweden, which gives you access to a flexible high speed, full scale TAD pilot machine, a well-equipped and organized laboratory and a unique spectrum of expertise on tissue machines and manufacturing processes. That's why there's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

After tests in our pilot facility, tissue manufacturers worldwide have been able to boost the value of their consumer products, speed up their machines and cut the consumption of energy, fibers, chemicals and water to enhance their competitive edge and profits. Moreover, your knowledge of the end consumer product and market, combined with our expertise on machine design and manufacturing processes, plus our unique technology center, provide an excellent foundation for developing your machine concept and production process.

Become Best in Tissue with Advantage Thru-Air Drying technology and benefit from:

- Increased efficiency of fiber use
- Greater absorbency with lower basis weight
- Improved capital efficiency
- Distinctive product appearance
- Increased bulk and softness





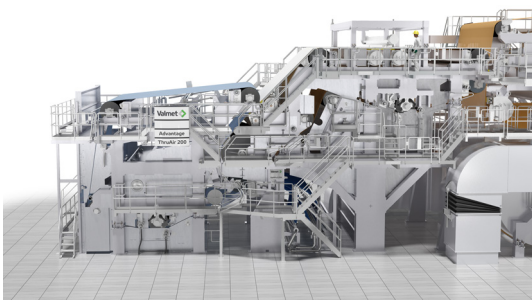
Meet the constantly changing needs of the tissue market

The TAD process avoids the destructive effect of wet pressing on bulk by instead removing water first by vacuum and then by passing hot air through the sheet. This generates a high bulk fully structured sheet. A distinctive pattern is then imparted to the sheet as it passes through the dry press by the TAD fabric to produce a soft flexible and bulky product.

With about 50 Valmet TAD Technology tissue making machines, plus rebuilds and air systems installed worldwide, we are uniquely qualified to bring this innovative technology to you at the lowest possible overall cost. Key sections of leading-edge Advantage ThruAir TAD tissue making lines are presented below.

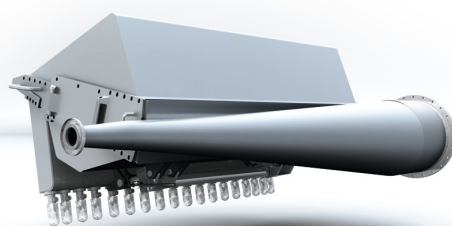
Former

The formers designed for simple trouble-free operation at high speeds. It features single-sided drainage, advanced mist control, high and medium vacuum dewatering and control system to fine-tune the moisture profile.



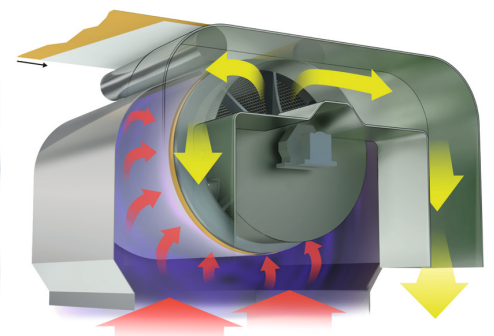
Headbox

IQ Slicepro dilution control is a standard feature on Advantage ThruAir concepts. The IQ Insight scanner continually monitors the basis weight distribution and the DCS, via a proprietary algorithm, adjusts the Headbox dilution valves to give a near perfect CD weight profile.



TAD section

The ThruAir Drying system provides excellent control of the drying process, longer fabric life and higher drying capacity in an efficient package. The heart of the process is the Honeycomb Roll® that has been used to produce tissue for nearly 50 years.





The Advantage Thru-Air Family

The Advantage Thru-Air 100 is best suited for the medium sized producer or one exploring emerging markets. For large scale producers in mature markets the Advantage Thru-Air 200 can provide the very high output required. The concept is at the same time flexible and machines of varying width and output can be customized to suit producers' special needs. All members of the Thru-Air family can produce top quality ultra premium products.

Product	Advantage ThruAir 100	Advantage ThruAir 200
TAD Section	2 by 12 ft TADs	2 by 16 ft TADs
Yankee	15 ft grooved	18 ft grooved
Basis weight range gsm (#/3000 ft ²)	16-50 (10-30)	15-50 (10-30)
Max reel speed m/min (fpm)	1500 (4925)	1600 (5250)
Sheet trim mm (inch)	2700 (106)	5400 (213)
*Daily Output tonnes (tons)	129 (142)	275 (303)

* 22 gsm (13,5 #/3000 ft²)

Yankee section

The high-capacity TAD system allows tissue transfer to the Yankee at high dryness, which simplifies coating control. The Yankee cylinder provides the final drying avoiding the complexity and fire risks of a Yankee hood and air system.

TAD fabric conditioning

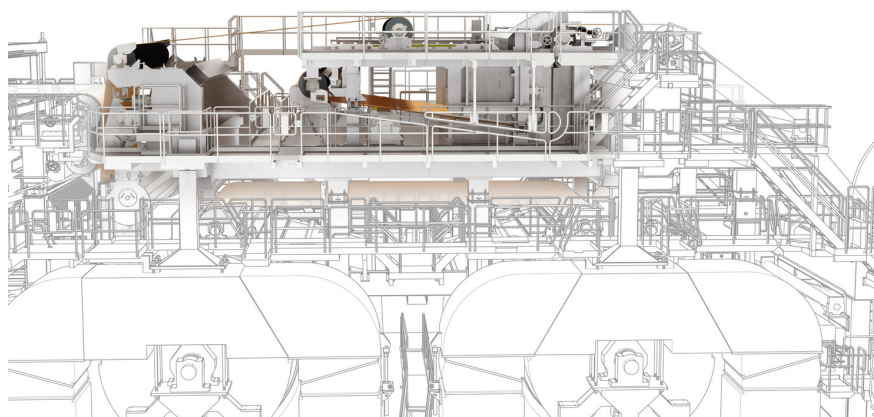
Separating the cleaning and dewatering sections eliminates mist and spray carryover. The fully cantilevered vertical arrangement, together with a powered retractable inlet hood, simplifies fabric changes with no need to disconnect showers or lift away sections. Large inclined pans and well-sited access doors allow cleaning as required.

TAD fabric release

The TAD fabric release section is designed to provide uniform application of release agent to the TAD fabric and is fully mist evacuated. Steam tracing eliminates drips and a powered hood simplifies fabric changing.

Dry end section

The dry end section utilizes the Advantage SoftReel B belted reel giving trouble free operation at all speeds. By winding on a belt, nip bubble problems disappear and the sheet is smoothly conveyed without flutter to the parent roll. The wind is more even with much reduced caliper variation through the roll. A dual nozzle high pressure servo controlled water jet turnover system provides precise turnovers and eliminates loose paper.



Valmet TAD is also the producer's choice

Valmet is by far the leading supplier of TAD tissue machines and drying equipment. The knowledge from decades of experience and innovation has been incorporated into our Advantage ThruAir family to deliver ease of operation, top quality production and flexibility at high output rates.

With the Advantage ThruAir 100, we created the first-ever medium-output TAD machine for emerging and medium markets. ThruAir 200 machines have the highest outputs in the world and are ideally suited to large markets requiring the highest possible quality.



TAD products deliver the highest rate of absorbency with the lowest basis weight of any comparable tissue product on the market today

Increased efficiency and fiber use

Valmet TAD machines are known for their ability to deliver products with superior sheet properties and improved fiber utilization rates than conventional machines. This translates into higher value products with lower fiber costs per case.

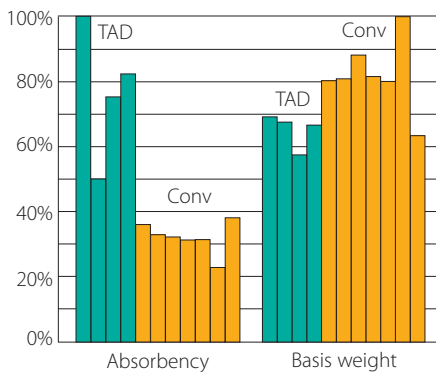
The engineered sheet

In addition to all the normal conventional machine tools, the Advantage ThruAir machines also offer the opportunities for rush transfer, molding, and a variety of TAD fabric styles. These all help to engineer a distinctive product with high consumer appeal.

Facilitating market penetration

In certain cases, established TAD tissue makers want smaller incremental capacity when they enter new geographical markets. In addition, newcomers to TAD tissue making may find it easier to break into the market by starting out with a machine that produces less tonnage with an overall lower capital cost. The Advantage ThruAir 100 was designed specifically to meet these needs in a cost effective way.

Rate of absorbency



TAD products deliver the highest rate of absorbency for the lowest basis weight of any comparable tissue product on the market today.

Low installation and operating costs

Valmet has simplified machine operation and evaluated machine design, building requirements and ancillary equipment in order to minimize project time and capital investment. Moreover, a robust process design and easily manageable machine speeds translate into high machine efficiencies and low operating costs.

An effective modular approach

The gradual accumulation of knowledge and continuous improvement steps we made during the development of our business led to the modular design and standardization of our tissue making lines that have now become benchmark in the industry. Important advantages gained here include quicker building, testing, delivery and installation of lines, as well as facilitating machine rebuilding at a later stage.

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 and control automation maintains smooth and uniform production, and a number of 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 up-time will also decrease over time.

What makes the Valmet service offering so unique is the comprehensive expertise of our personnel covering all aspects of pulp and paper technology built up over decades of advancing production within the industry. And although we have a global reach, our local presence assures you of the closest attention when and where it's needed throughout the life cycle of a production line.

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

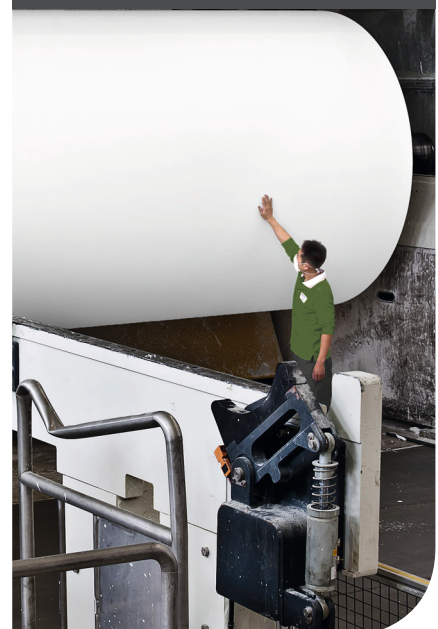
Safe working environment and products are essential and considered in every step of Valmet's technology development. All our products and technologies fulfill safety regulations according to requirements in the European directives as well as other specific regulations or requirements agreed with our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



Over the years, several surveys have confirmed the correlation between proactive maintenance and profitability. The results are unmistakable: proactive maintenance is profitable.





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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