Products engineered to optimize performance on high speed tissue machines

The Kadant Family of tissue solutions includes an extensive range of products that brings together the latest advancements in technology from stock preparation to the reel.

The Kadant name is associated with a history of industry firsts that delivers enhanced product quality and increased production at maximum value to the tissue process.

Stock Preparation
- Pulping
- Cleaning & Screening
- Flotation Deinking and Washing
- Kneading and Bleaching

Approach Flow
- Refining
- Cleaning & Screening
- Fiber Recovery

Wet End
- Filtration
- Showering
- Cleaning & Conditioning
- Doctoring
- Tail Cutting

Dry End
- Chemical Application
- Yankee Doctoring
- Calender/Reel Doctoring
Stock Preparation & Approach Flow

Kadant supplies cost effective stock preparation and approach flow systems for both virgin and recycled pulp, assuring highest quality and return on investment.

Pulping

High Consistency Pulping

Helico pulpers provide excellent defibering by reducing good fiber losses and saving heat, energy and chemicals. Further advantages include superior ink detachment from white waste paper and better physical properties for virgin fiber.

The Kadant HeliPoire combines the best features of the Helico pulper and the Dumping Poire or Batch Scavenger. It is an efficient detrashing system for contaminant removal without breaking up non-fibrous materials – often eliminating the need for coarse screens.

Low and Medium Consistency Pulping

The EU Batch Medium/Low Consistency Pulper is also used on virgin pulp. Its Mid-Con rotor allows consistency increases.

Cleaning & Screening

All stock preparation systems use centrifugal cleaning, in different positions, for removing contaminants based on specific gravity.

High density cleaners: early in the system to remove heavier debris such as stones, paper clips, course sand and wire etc.

Small diameter, high centrifugal force, cyclones: later, for the removal of smaller lighter contaminants such as dirt, inks, fine sand and some stickies.

Reverse cleaners: to remove lightweight particles such as wax and most stickies.

Kadant supplies equipment to satisfy the above requirements.

- Kadant EPE and Kadant Liquid Cyclones for high density application
- Kadant Cyclotech Cleaners for fine cleaning
- Kadant Ultracones and Gyrocleans for the reverse cleaning

Screening removes contaminants defined by size: coarse screens for large debris and fine slotted screens for very small.

Kadant supplies equipment for this.

- Kadant Ultra-V upward flow screens for coarse and fine screening
- Kadant SP inward-flow pressure screens for fine debris and sticky removal
- Kadant ScreenONE for fine screening, incorporating all 3 stages in one screen
- Kadant Diabolo and Kadant FiberNET reject screens
Flotation Deinking and Washing

Flotation deinking is required for the best removal of inks, stickies, and ash in that order of effectiveness. Often 2 loops incorporating 2 stages of flotation are utilized in the process of deinking for fine tissue grades.

Washing is required in the process used for tissue in order to remove ash, ink and stickies.

Kadant supplies the required equipment for flotation and washing.

- Kadant Mac Cell for high efficiency flotation deinking
- Kadant DNT for the highest efficiency in ash or clay removal

This equipment provides the lowest operating costs, highest efficiencies, and lowest fiber losses.

Kneading & Dispersion

Kneading and dispersion are employed for the dispersion and sizing of ink and stickies to prepare the pulp for optimum removal of these contaminants. The dispersers and kneaders might be installed before or after flotation or washing depending on the type of furnish being processed.

The kneading technology supplied by Kadant is proven technology for improving tissue quality where softness is a key requirement.

Approach Flow

After the stock preparation system, whether virgin or recycle, has provided a clean fiber furnish for introduction to the paper machine, the pulp passes to the paper machine approach flow system.

This system must be designed to provide the proper refining or fibrillation to the fibers. The fiber slurry must also be finally centrifugally cleaned to remove small dirt particles and screened to remove any oversized contaminants, normally introduced in the water circuit or by agglomeration in the machine chest.

The screening step should be designed to provide positive protection for the machine head box sluice and for the expensive forming fabrics on the machine.

Kadant offers leading edge equipment for this approach flow step.

- Kadant Twin Hydradisc refiner for improved smoothness, strength and formation
- Kadant Cyclotech centrifugal cleaners for fine dirt removal
- Kadant SP inward-flow screens for debris removal, formation enhancement, and paper machine protection
Kadant’s superior-engineered fabric cleaning and conditioning systems enhance tissue quality and reduce operating costs by extending fabric life, minimizing maintenance, and increasing efficiency. Tissue forming fabrics, prone to quick contamination, require a specialized cleaning and conditioning strategy.

**Filtration**

**Advanced Filtration Systems for Cleaning and Environmental Compliance**

Kadant offers a range of products that clean process fluids, retrieve usable materials, and allow compliance with environmental regulations. These systems consist of in-line and multiple-barrel pressure filters, and gravity or vacuum-assisted strainers.

**Advanced Filtration for White Water Re-Use**

Kadant’s latest advancement in filtration technology is the Petax™ Fine Filtration System. Petax efficiently removes particles as fine as 1 micron from white water, allowing the water to be reused elsewhere – even high pressure showers. The Petax system allows you to cost-effectively clean and filter process water without adding chemicals or sweetener stock.
Showering

Kadant offers advanced oscillating and high-pressure showers designed specifically for the demands of high-speed tissue machines. Along with increased production efficiencies, the effective use of showers delivers:

- Better profile
- Decreased steam use
- Less fiber and cheaper fiber
- Improved sheet quality

Showers maintain fabric properties over the life of the fabric.

- Removing containments
- Combating compaction
- Preserving permeability
- Maintaining surface conditions
- Retarding wear (lubricate)

Kadant offers a range of fan showers, oscillating needle jet and single jet traversing showers that vary in the design and application depending on where it is used in the tissue machine.

Kadant’s Accu-Jet™ and Thermo-Jet™ traversing showers allow the use of less water at higher pressures to remove stubborn contaminants without streaking the sheet or damaging the fabric. Oscillating showers, such as Arcline™, provide reliable motion and complete and even fluid distribution for improved productivity and low maintenance.

Mist Elimination

Mist around tissue machines can lead to production loss due to extra clean-up time, sheet breaks and poor sheet quality. Kadant’s Mist Eliminator™ is a mist-free high pressure cleaning system that provides:

- Clean fabric and mist-free, clean environment
- Less product loss and sheet breaks
- Evenly dry fabric
- Dramatic process improvement

The Mist Elimination System is ideal for tissue machines and is adaptable to any machine configuration.
Felt Cleaning & Conditioning

As the use of recycled fiber increases, the cleaning of forming, press and dryer fabrics becomes even more critical. This fiber source causes greater contamination throughout the process and is more difficult to remove than contaminants associated with virgin fiber. Therefore, cleaning systems must be used on a continuous basis and include the use of chemicals for successful contaminant removal.

Kadant solutions for more difficult cleaning applications may include:

- Fabric brush assemblies with integrated rotating fabric brush and brush cleaning shower assemblies that are highly effective for removing surface contaminants from machine fabrics
- Vacuum suction box and suction pipe assemblies that provide custom dewatering and high efficiency exhausters specific to your needs

Doctoring

Wet end doctoring is critical to sheet formation and quality. If ignored, debris on wire/felt return rolls can cause sheet defects and reduce machine clothing life. Selection of correct blade material is important for roll cleaning and efficient removal of water/fines for overall reduction in roll wear.

Couch and suction roll doctoring enhances sheet consistency, reduces variation in moisture profile. Specific blade materials such as Softek® have been developed for doctoring soft, wet end rolls. High efficiency wet end doctoring results in:

- Cleaner rolls
- Better sheet formation
- Longer blade and roll life
- Enhanced felt and wire life
Double Doctoring

The single most important wet end doctors used on tissue machines are for couch, suction press and pressure rolls. Double doctoring in these positions has revolutionized water removal on these rolls. Traditional rubber wipes used extensively in these positions actually hinder water removal. Double doctors not only remove the excess water/fines but significantly improve moisture profiles, fabric life, vacuum efficiency and sheet consistency. Sheet rewetting in these positions can be easily prevented with double doctors.

- Cleaner roll surfaces.
- Cleaner holes in roll shells.
- Reduced wear on vacuum box seal strips.

Tail Cutting

Where appropriate, wet end tail cutters speed up the process of threading the sheet to the Yankee. Wet end tail cutters are equipped with variable positioning. These can be operator controlled or set to pre-defined positions. It is important to have good sheet edge quality to avoid costly downtime related to edge breaks during threading. A high pressure nozzle with a precise jet ensures quick thread up times.

- Ease and speed of threading.
- Reduced downtime.
- Variable positioning aids different trim widths.
Chemical Application

Chemical coating application on Yankee Dryers plays a significant role in sheet softness and quality. These chemicals are applied in precise amounts to control sheet properties. The expense and impact of these chemicals also mandates that the spray boom showers apply these chemicals evenly and efficiently.

A properly designed system maintains equal pressure and volume across the spray boom length by circulating the coating chemicals to avoid stagnation. In addition, the nozzle design, angle, distance from the Yankee and oscillation of the spray boom ensure even streak-free application of the chemicals.

Yankee Doctoring

The heart of a tissue machine, a creping doctor is where tissue gets created. Due to the demands placed on a creping doctor, it is essentially different than any other doctor on a tissue machine. Kadant’s Tear-Drop beam design minimizes deflection and significantly increases torsional rigidity reducing vibration. This becomes even more important on high load creping applications such as TAD machines. The industry standard HD Conformatic™ Holder forms the backbone of this doctoring system. The doctor can be machined for the Yankee profile and the holder can compensate for any variation and wear while in use. In addition, the patented edge relief fingers allow for adjustment outside the sheet while the cartridges allow for quick blade changes and holder hygiene.

For machines producing premium grades, Continuous Crepe™ doctoring systems allow for a continuous quality without the usual drop in softness and increase in bulk. This cyclical quality is avoided with a continuous feed of blade stock across the Yankee thereby eliminating blade changes.
Calender/Reel Doctoring

ProCrepe® blades bring a new level of quality and efficiency to tissue machines. Used on conventional machines, tissue makers can expect quality levels only achievable on TAD machines. In addition, these blades significantly enhance machine efficiency and overall runnability of tissue machines.

Machines using calenders after the Yankee need doctors to maintain clean surfaces. Calendering operation minimizes bulk variation and thus any debris collection on the rolls can significantly reduce the efficiency of such operation. Depending on the grade, dust collection on calendering rolls can cause dust to be wrapped in the sheet. This causes costly downtime during the converting operation.

Reel doctoring keeps the roll surface clean and reduces breaks at the reel drum. This minimizes thread up issues and related downtime.

A wide range of synthetic/composite blade materials are available for doctoring of high-temperature calenders and reel drums.

Yankee Doctors

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Cleaning/Cutoff

Although not present on all machines, cleaning doctors significantly improve the runnability of tissue machines by enhancing surface characteristics of the Yankee prior to chemical application and sheet adhesion.

Cleaning doctors enhance coating profiles which in turn significantly impacts sheet profile. In addition cleaning doctor holders can be "profiled in" to clean the edges outside the sheet where creping holders are normally "profiled out." A new generation of self profiling holders are available for the cleaning doctors.

Cutoff doctors are also designed with minimal deflection characteristics while having the ability to shed the sheet during operation. The holder designs for these doctors are much simpler thus minimizing the overall cost of Yankee doctors.

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Research & Development

Kadant employs the finest engineering minds in the doctoring, stock preparation and water management business and supports them with state-of-the-art facilities.

Input from our field service personnel helps direct our R&D efforts. The primary impetus for this input comes from the thousands of installations and applications in paper mills around the world.

Many of the paper machine solutions that improve today’s papermaking are developed in collaboration with our customers. This represents our business methodology of working as a strategic partner with our customers to provide superior process solutions.

24/7 Service

Our globally located field sales/service engineers are strategically located to provide unparalleled customer service.

A SWAT team of highly experienced and fully trained doctoring technicians are also available to answer questions and help solve critical doctoring related problems.

Applications

Our long list of innovations and patents is representative of our experience in more applications than all of our competitors combined. These include:

- Screening Systems
  - Ultra V
    - ScreenONE
    - SP
    - Diabolo
    - FiberNET
- Cleaning System
  - Cyclotech
  - Gyroclean
  - Extreme Cleaner
- Flotation
  - Mac Cell
- Washing
  - DNT Washer
- Pulping
  - Vortech rotor
  - Maximizer
  - Bed Plate
- Conformatic® Holders
- Double - Dual doctors
- Unidirectional blade technology
- Self profiling blade holders
- Continuous Crepe System™
- Bi-Metal blade technology
- Slideout holder technology
Kadant Inc. is a leading supplier of a range of products for the global papermaking and paper recycling industries, including de-inking systems, stock-preparation equipment, water management systems, and papermaking accessories.