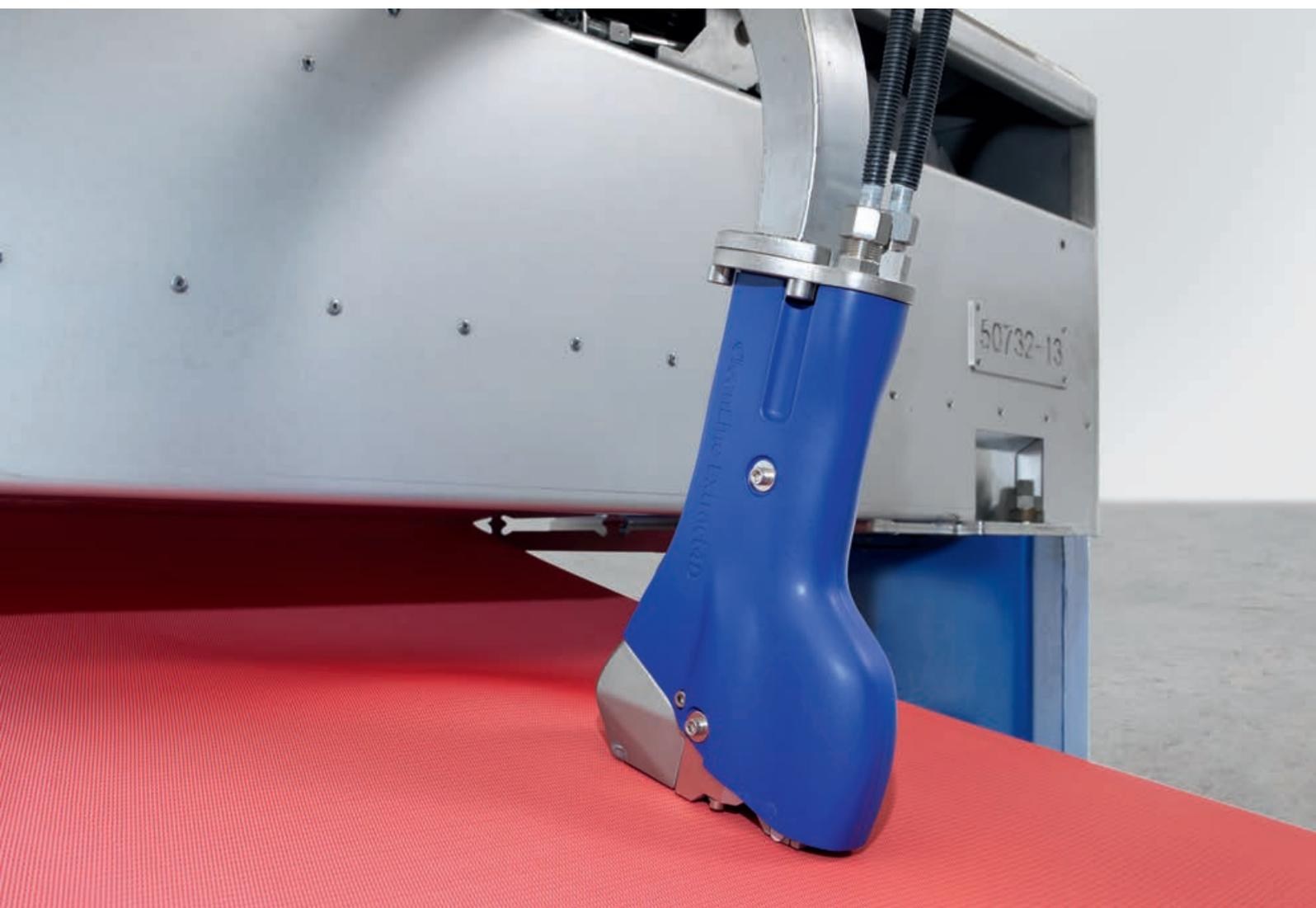


The complete solution for fabric cleaning **CleanLine**



Cleaning innovations for every paper machine section



As a leading supplier of world-class paper machines and high-quality fabrics, designing top-performing cleaning systems is an integral part of our business at Voith. CleanLine offers a complete range of cleaning systems to remove contamination in every section of your paper machine.

Paper machine fabrics are critical to process and run in a harsh production environment. Continuous fabric performance and optimal productivity are significantly improved with CleanLine traversing cleaning systems. CleanLine is a comprehensive range of fabric cleaners that meets the challenging demands and conditions across the entire paper machine.

CleanLine Excell cleans forming fabrics, press fabrics and transfer belts. CleanLine Extract4D removes contamination from dryer fabrics, and CleanLine Extreme provides online and offline cleaning of fabrics after coaters. Consistent and uniform cleaning of the surface and structure of fabrics results in better runnability, fewer shutdowns, overall improved paper quality and a safer working environment for operators.



Section	Former	Press	Dryer	Coater
CleanLine Excell Consistent and uniform cleaning	•	•		
CleanLine Extract4D Cleaning in every direction			•	
CleanLine Extreme Continuos online cleaning				•



Excellent cleaning of forming and press fabrics

CleanLine Excell

High fiber retention and uniform dewatering are key factors of performance in the forming and press sections of your paper machine. Running top-quality fabrics is the first step in achieving these goals. This performance is maintained at a higher level with a traversing cleaning system because it is more consistent than a high pressure shower.

Voith's CleanLine Excell is an efficient cleaning system for consistent and uniform cleaning of the surface and structure of forming and press fabrics. With CleanLine Excell, papermakers have less contamination, resulting in better runnability, fewer shutdowns and overall improved paper quality. A unique combination of cleaning actions reduces the effects of contamination to create a new operating window in forming and pressing.

Superior jet design

Conventional cleaning showers use oscillating or fixed high-pressure needle jets that cause variation and uneven cleaning across the fabric. Voith designed the CleanLine Excell to give the same amount of cleaning to all of the fabric for consistent and uniform performance. It has a high number of water jets that are close together and can clean in two directions for concentrated cleaning. Any localized contamination of the fabric will receive additional cleaning.

The fine, fast jets of CleanLine Excell penetrate deep into the fabric structure to deflect particles out of the voids between the fine mesh of the forming fabric and the needled batt of the press fabric. The 45 degree angle of the water jets prevents many of the contaminants from being pushed into the fabric structure.



- 1 Cleaning head of the CleanLine Excell.
- 2 MSD nozzles are used across the fabric for consistent cleaning.
- 3 Effective cleaning for forming and press sections of the machine.

Cost savings

The CleanLine Excell cleaning system offers a number of cost-saving benefits for papermakers. It significantly reduces chemical cleaning and uses less water than high pressure showers.

Ultimately, CleanLine Excell improves the overall runnability and productivity of the paper machine by maintaining the performance of the forming and press fabrics.

Benefits at a glance

- + Improved drainage and sheet dewatering for forming and press fabrics
 - + Uses less cleaning chemicals
 - + Greater fabric permeability retention
 - + Better uniformity
 - + Less water and energy consumption
 - + Better runnability
-



Four-directional dryer fabric cleaning

CleanLine Extract4D

Contamination in the dryer section reduces productivity by affecting drying efficiency and runnability. Fabric permeability is reduced by contamination on the fabric surface, at the crossover points between the yarns, and within the voids of the structure. Conventional cleaning systems with water jets in one direction only contact a fraction of these contaminants. Thus, higher water pressures are used, which can cause damage to the dryer fabric.

CleanLine Extract4D, with water jets in four directions, overcomes the limitations of conventional cleaning systems.

Innovative jet design

The cleaning jets of the CleanLine Extract4D are aimed directly at the contamination – on the fabric, inside the fabric structure, and through the CMD voids. The accuracy of the jets allows more effective cleaning in order to maintain the

performance of the fabric. The nozzles are close to the fabric surface and deflect contamination from the fabric surface towards injectors in a vacuum zone. Contamination inside the fabric structure is deflected or moved into a catcher tray. An air knife blows residual cleaning water through the fabric.

Improving sheet quality

CleanLine Extract4D reduces the build-up of contamination for higher and more uniform heat transfer to the sheet. It maintains the performance of the dryer fabric to avoid unnecessary changes at machine shutdowns. Fewer sheet breaks and better sheet quality are achieved by deterring the growth of contaminants into larger scabs that would otherwise break free of the fabric. The cleaning system reduces the transfer of contamination from the fabric onto rolls and cylinders, and it retains fabric permeability for effective use of sheet stabilizer equipment.

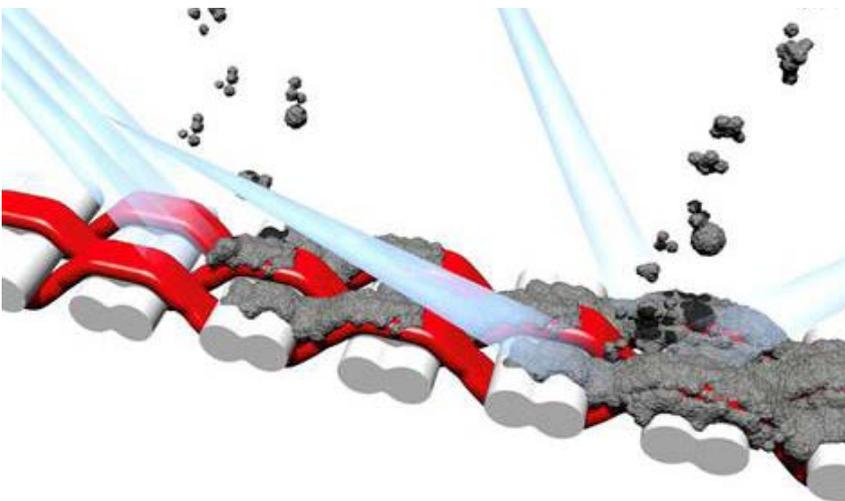


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- 1 Optimum dryer fabric cleaning with CleanLine Extract4D
- 2 Easy adjustment for continuous performance
- 3 CleanLine Extract4D for the dryer section.

Four-direction cleaning

Water jets directly contact all of the fabric



Benefits at a glance

- + Improved retention of fabric permeability
 - + Increased drying efficiency
 - + Better sheet stability and tail threading
 - + Uses less cleaning chemicals
 - + Optimized sheet quality
-



Fabric cleaning for high-quality coated paper

CleanLine Extreme

Achieving a high-quality surface on coated papers requires the fabrics after coater sections to be free of contaminants. Stripes from blade failures, contamination from breaks, and contamination stripes at the paper edges are concerns that impact both production efficiency and paper quality. Often it is only possible to carry out manual or offline shock cleaning of the fabrics after a sheet break or during shutdowns. This means that in between cleaning, spots of coating can run on the fabric surface and transfer back to the sheet causing a mark.

The solution is CleanLine Extreme, which cleans both online and offline to provide additional benefits for papermakers.

Online and offline cleaning

An evolution of proven fabric cleaning systems from Voith, CleanLine Extreme is designed specifically for the fabrics in the coating section of the paper machine. With automatic and safe offline cleaning, its multiple water jets are faster, more reliable and uniform, resulting in less man-hours and a cleaner fabric than manual cleaning can produce. An extended air knife blows out the residual cleaning water for a fast restart of the coater.



- 1 Innovative cleaner head for continuous online cleaning.
- 2 Multiple jets for optimal offline and online cleaning.
- 3 CleanLine Extreme removes coating streaks from fabric.

Superior air drying

For cleaning online, a single water jet and extended air knife are followed by an air inlet, heating and drying unit. This equipment removes the coating spot splashes from the fabric and keeps the fabric free of surface water.

This innovative design is running successfully on key reference machines, providing consistent luster or gloss on the paper surface to ensure excellent printability.

Benefits at a glance

- + **Cleans consistently both online and offline**
 - + **Yields highest quality coated paper**
 - + **Improved fabric performance**
 - + **Safe operation and reduced manual handling**
 - + **Easy maintenance**
-



Equipment services for maximum availability

With our deep knowledge of the papermaking process, Voith's role goes well beyond that of a machine and equipment manufacturer. Our expert servicing capabilities and advanced process solutions enable our customers to obtain the maximum value out of their machines and components.

Highest availability of equipment

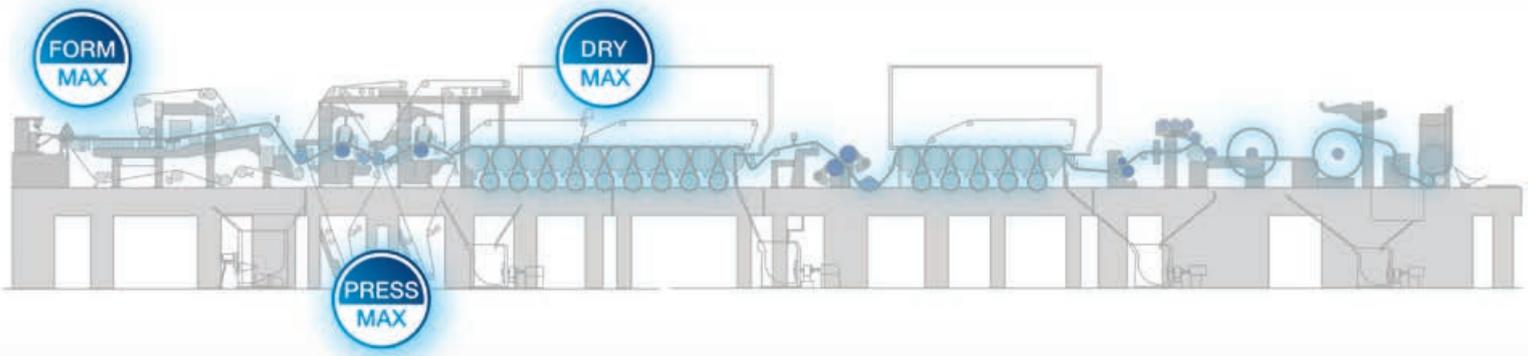
With CleanLine, service personnel have easy access to all working parts of the system, thereby reducing maintenance time and ensuring availability of the equipment. A long lifetime of the system will be achieved with regular and comprehensive service from Voith.

With more than 1,000 installed Voith cleaning systems, our service technicians are highly skilled in handling preventative maintenance and repairs of fabric cleaning systems. Standardized service procedures developed from a knowledge base of many years allow Voith to service your CleanLine cleaning systems quickly, safely and thoroughly. Our customers have come to realize that tapping into this service expertise saves them time and money.

Benefits at a glance

- + Increased availability of your CleanLine systems
 - + Qualified service directly from the manufacturer ensures perfect technical condition of your CleanLine systems
 - + Longer lifetime of your CleanLine equipment
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Advanced PRODUCTS



Smart product combinations for optimal performance

AdvancedPRODUCTS

With AdvancedPRODUCTS, we offer smart product combinations that work in perfect harmony with one another. Higher added value is achieved through individually matched product combinations that maximize the performance of your paper machine.

For example, the effects of contamination are significantly reduced in the dryer section with CleanLine Extract4D, unique CleanWeave dryer fabrics, ProRelease+ web stabilizer, and TerraDry roll covers.

Together, these solutions elevate the overall performance of your machine to lower operating costs, increase productivity, improve paper quality and ensure employee safety.



Lower operating cost



Increased productivity



Higher quality



Improved safety

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VOITH

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for Generations