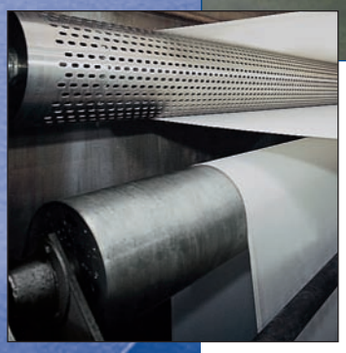
Bleaching



BRUGMAN
HOLLAND

Founded in 1954 Brugman has become one of the world's leading manufacturers of wet-pre-treatment machines for woven fabrics. Since 2002 Brugman belongs to the Vanwyk Group of companies. With a head office and production facilities in the Netherlands, and a sales and service centre in China, we deliver machinery to textile manufacturers all over the world. Through the years Brugman introduced various innovative developments to the market. The combination steamer, the Brubo-matic bearing and sealing construction, UNIPAD squeezing rollers and the bleach-o-matic are examples of such innovations. Research and development is carried out in close co-operation with research institutes, customers and chemical suppliers and is always aimed at practical solutions. Brugman machines are well known for their reliability, robust construction, low maintenance requirements, ease of operation and value for money.

Bleaching

by Brugman

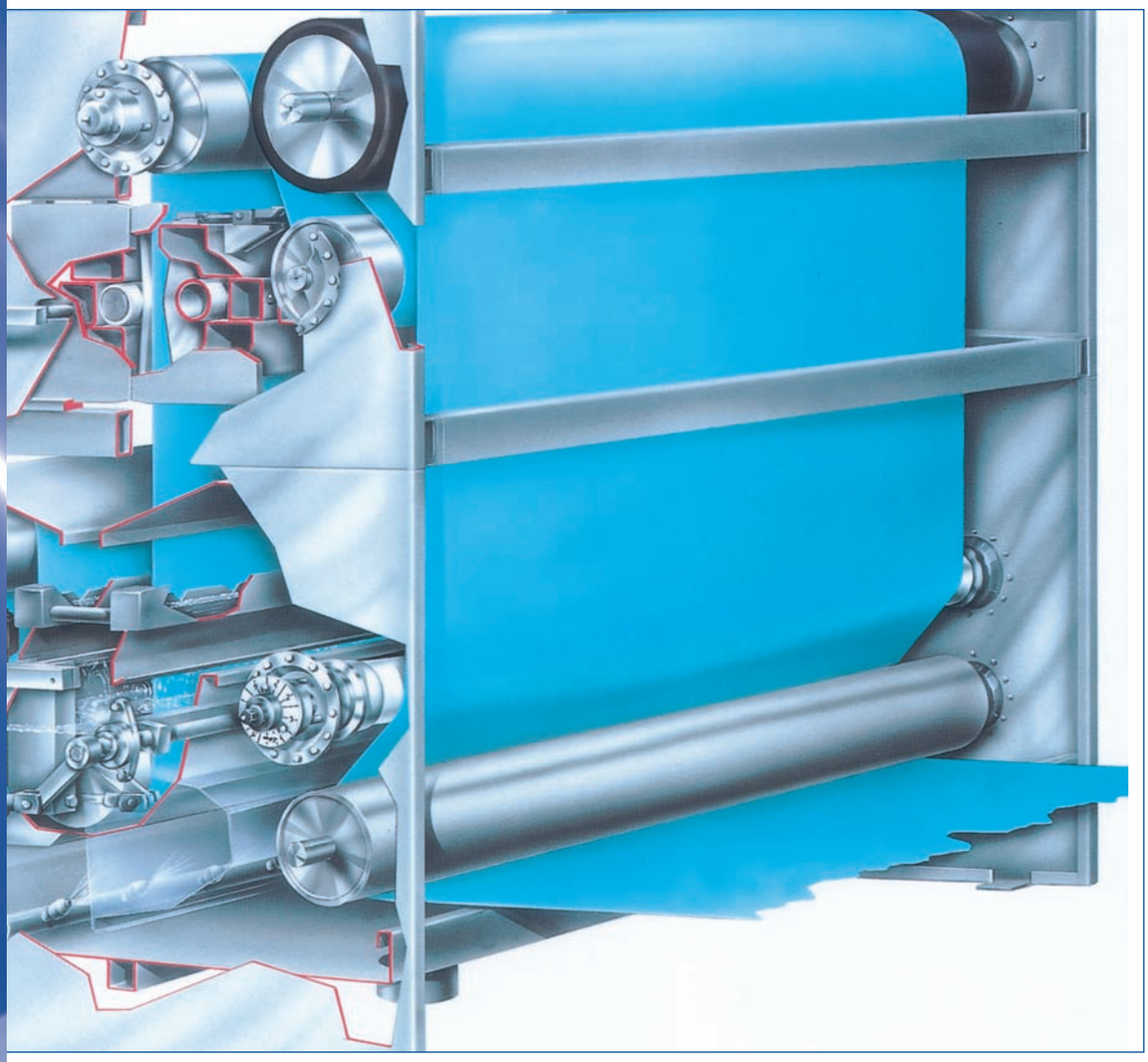
Stringent requirements are imposed on pre-treatment machinery with respect to uniform bleaching results and fixed reproducibility. The market demands flexibility in coping with smaller batches and high standards of whiteness, absorbency and residual strength must be met. Ever since the introduction of the world's first combi-steamer in 1978 Brugman has introduced, improved and set standards in reliable bleaching equipment.

A Brugman continuous bleaching range has the following characteristics:

- guaranteed uniform application of chemicals
- reproducibility under all conditions
- thorough penetration of chemicals
- integrated cleaning system
- correct fabric temperature achieved before dwelling
- accurate plaiting without fabric movement to prevent creasing
- uniform reaction due to uniform steaming of plaited fabric
- maximum energy utilisation
- tension controlled fabric transport
- excellent fabric widening and centering

Single stage bleaching

The state of the art technology is the concept of single stage processing. To enable high add-on processing and short change-over times specific requirements are imposed on the equipment. Brugman's solution to these requirements is the Brubo-Sat concept, comprising a chemical applicator, dosing system and steamer.



Brubo-Sat chemical applicator

Bleaching starts with the uniform and reproducible application of chemicals. The Brubo-Sat applicator offers the flexible and controlled add-on of liquor. It consists of a trough with a liquor contents of only 10-15 l/m roller width and a subsequent add-on control system. The short dip inhibits the exchange of liquor with the wet fabric and enables rapid recipe change.
For easy cleaning the trough is executed with an automatic drainage device with spray unit. The chemical distribution system guarantees an even supply on both faces and over the full width of the fabric.
The chemical impregnated fabric enters the add-on control system from below and is doctored equally at both faces. The doctoring is effected by two opposed flexible elements and the actual pick-up of liquor is adjusted by pressure on these elements.

With an initial moisture content of 70% and an add-on of 50 to 80% the fabric is exiting with a liquor content of 120 to 150%. This is ideal for single stage pre-treatment processing. The add-on control system is easily opened for fabric threading, cleaning and maintenance.

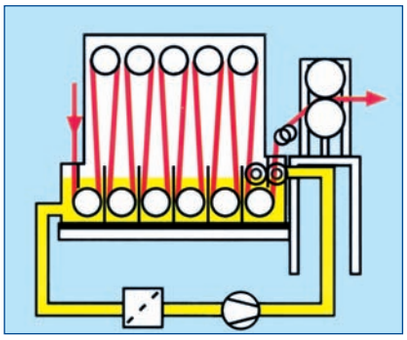
Roller Impregnator

For desizing or cold pad batch applications a conventional impregnator is applied. This inpregnator consists of a roller compartment with counter current partitions.

The impregnating bath has continuous circulation and filtration. Uniform impregnating results are guaranteed by the application of Brugman's unique 'Unipad' non deflection squeezing unit.

Depending on the application, an optional indirect heating can be incorporated.

Dosing of chemicals takes place either via a level control or by process automated dosing cylinders in ratio to the fabric production.



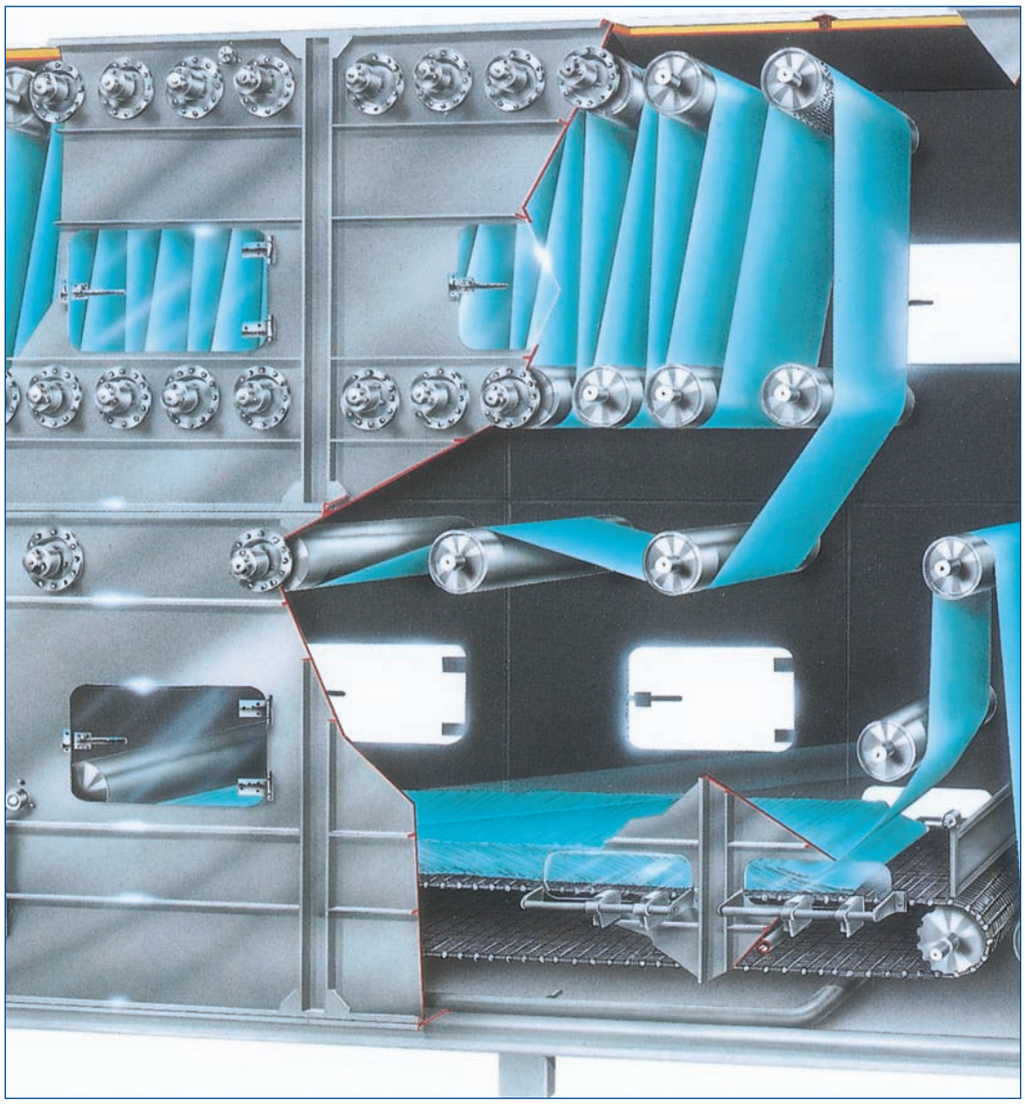
Brubo-Sat accurate dosing system

The combination of a low liquor content in the applicator trough and a centrally controlled chemical feed results in recipe changes within one minute. A proportional level detector in the trough controls the water feed.
Chemical dosing is performed by automated membrane pumps. The required flow is achieved by setting of stroke length and frequency. Individual chemicals and water are mixed and fed to the chemical distribution system in the trough. The dosing system uses chemicals directly from trade containers, minimising both waste and handling time.

Brubo-Sat

optimum steaming

In this stage of the treatment the basic characteristics of the fabric are determined. Therefore the process conditions as well as the handling of the fabric are vital. Based on vast experience in continuous bleaching, Brugman has designed a steamer meeting the entire range of requirements throughout the industry.



Ideal process conditions

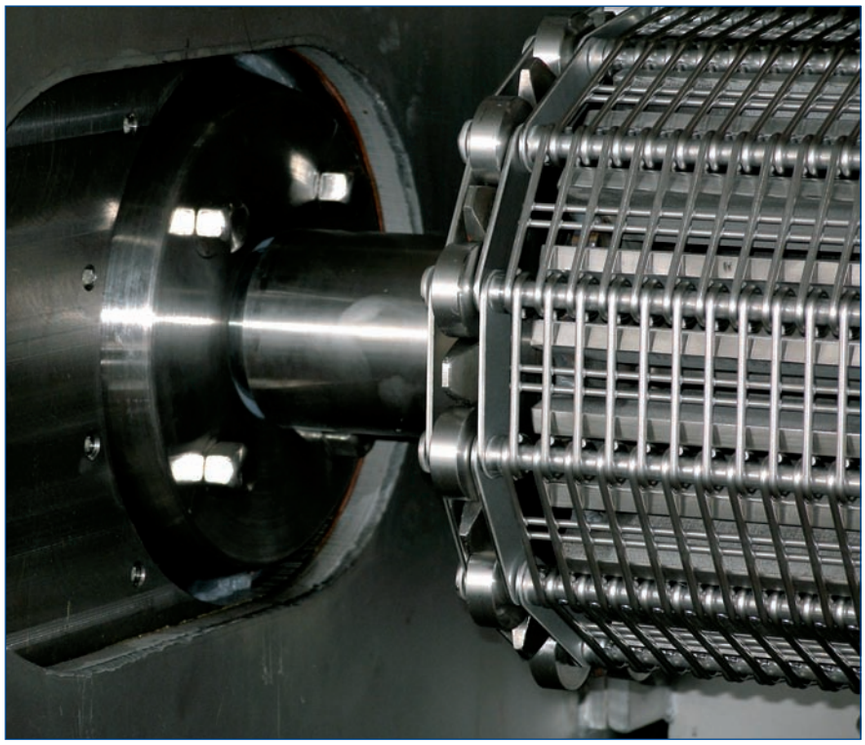
An even penetration of the applied chemicals is essential for uniform preparation of the fabric. For this purpose the first part of the tight strand section is horizontal. Equally important is thorough heating. Average fabric types require a reaction time of about 45 seconds before plaiting.

For the next phase in the reaction process, the fabric is plaited onto a conveyor belt. This stainless steel belt has an open structure to ensure that saturated steam has easy access to the fabric. This ensures the correct temperature and humidity. Optical sensors maintain the correct content of fabric on the conveyor belt.

A steam conditioning unit provides saturated and thus air-free steam. Dual steam distribution pipes over the length of the steamer ensure uniform steaming conditions. A low fabric entry, with an excess steam exhaust system, prevents air from entering into the steamer. The fabric exit is closely connected to the subsequent washing line to avoid temperature losses.

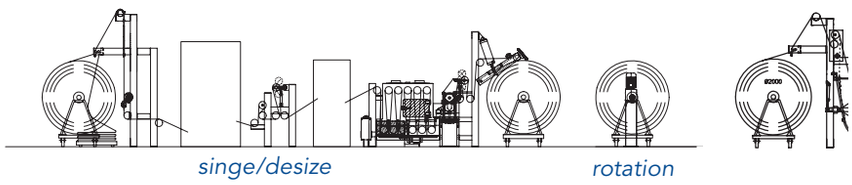
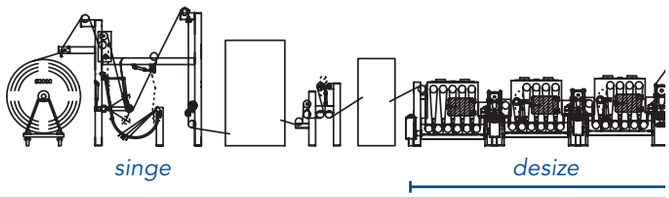
Excellent fabric handling

Optimum fabric running is ensured by lightweight fabric guiding rollers, low friction bearings, limited distance between the rollers and by intermediate drives. In order to avoid slippage the driven rollers are perforated. A double 360° rotating plaiting system folds the fabric onto a guiding roller section.

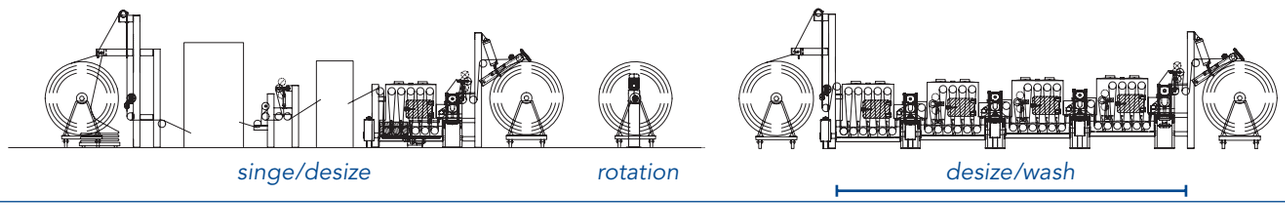


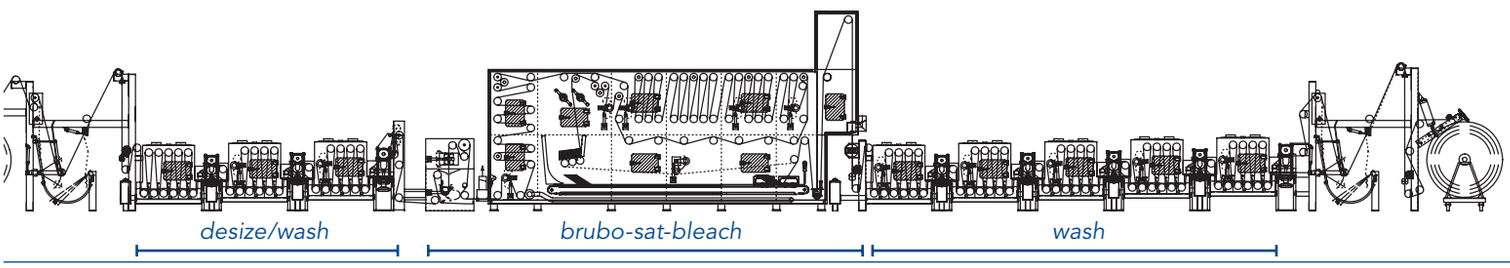
From this section the fabric is turned over and transferred to the conveyor belt via an adjustable sliding plate. Adjustable driven scroll expanders and selvedge guiders ensure an excellent transfer to the washing section.

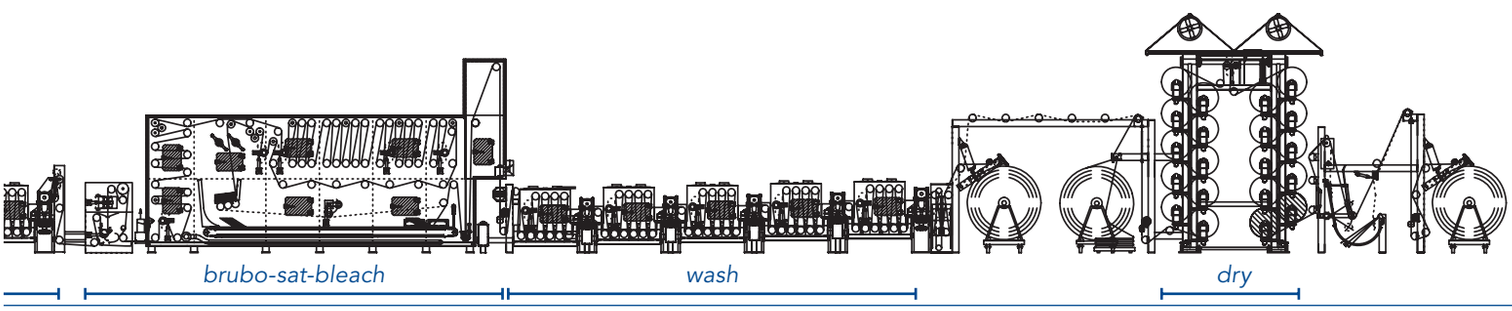
The bleaching process

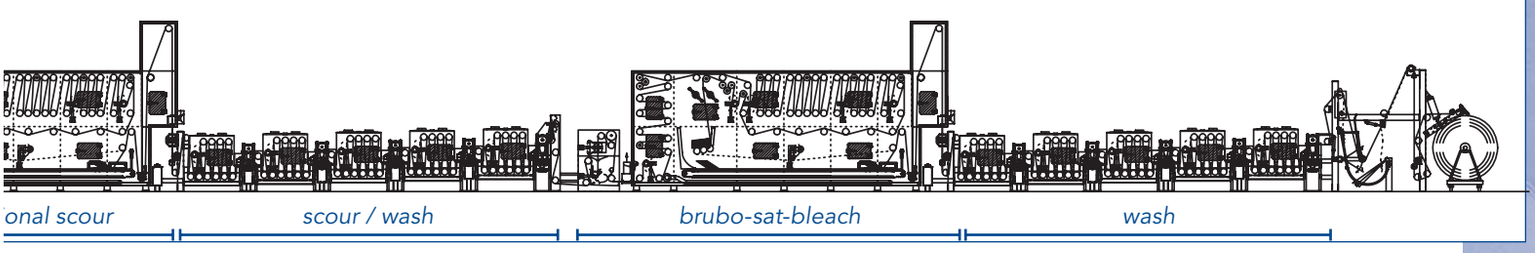
Type of process	Characteristics	
Discontinuous pre-treatment cold-pad-batch	• low investment • suitable for most fabrics • small production volume • low energy cost	
Semi-continuous pre-treatment one-stage bleach	• high process flexibility • flexible mercerising stage	
Continuous pre-treatment, one-stage bleach	• high production volume • quick throughput • no rotation stands • no separate scouring treatment required	
Continuous pre-treatment, two-stage bleach	• high production volume • low handling • quick throughput • high investment	

With its modular concept Brugman offers a wide range of semi-continuous or continuous bleaching ranges. Our bleaching program comprises the Brubo-Sat bleach concept with a chemical applicator, dosing system and steamer as well as the various Brubo-Matic washers. With these modules Brugman builds ranges that fulfil all customer demands.

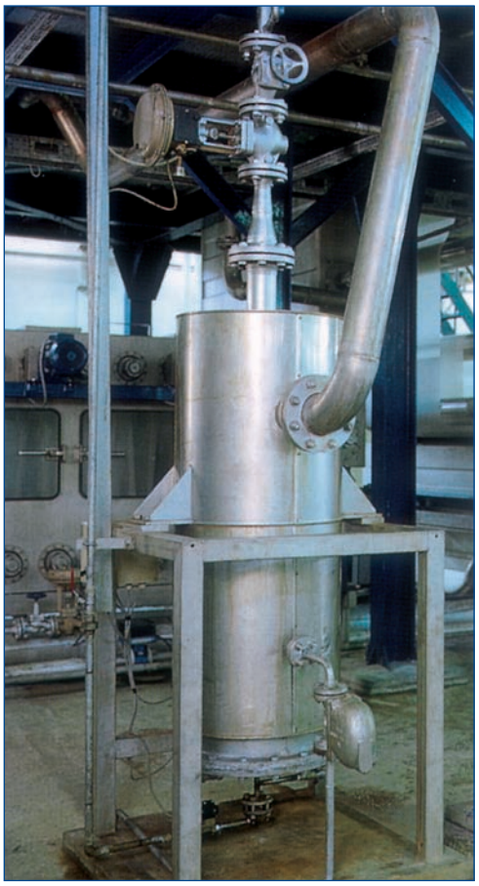








Completing the range

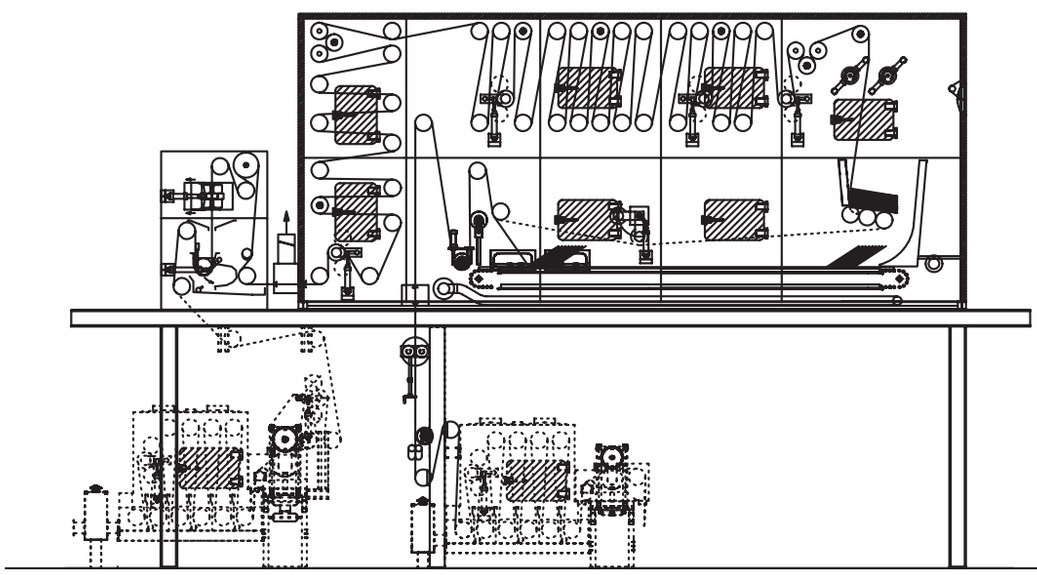


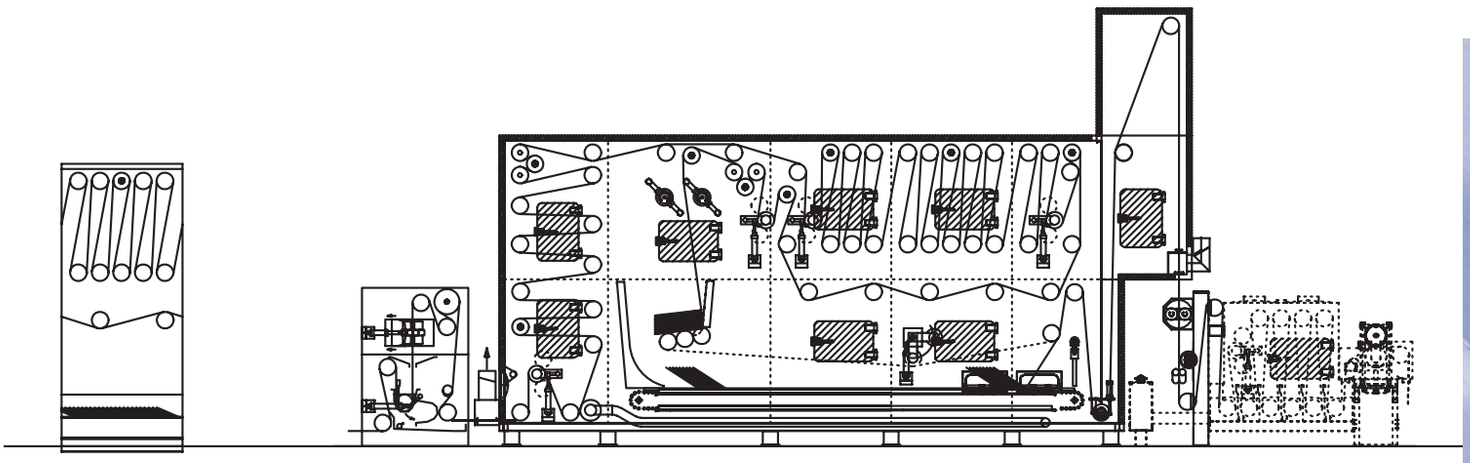
Steam conditioning

The steam condition inside the steamer is controlled by a temperature sensor. The steam cooling and saturating device guarantees the supply of fully saturated and thus air-free steam.

Platform

When floor space is limited the Brubo-Sat applicator and steamer can be elevated onto a platform. In this set up the washing machine can be used separately.





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