

MENZEL

Presenting Menzel World-Class Wet Textile Processing Range



Menzel
Bleaching, Washing,
Chainless, Chain & Combi
Mercerising Range



MENZEL Engineering India Pvt. Ltd. A German Joint Venture Company

C COMPANY PROFILE

Menzel Engineering India Pvt. Ltd., a German joint venture company is well established since last 10 years with manufacturing and marketing facility in Mumbai and Ahmedabad and many strategically located Service Centres in India providing prompt, efficient and dependable product service support. Menzel is a world renowned leader who already has the capability of manufacturing and delivering world-class quality.

With Menzel India as partners it's the coming together of world disciplines i.e. technical know how and manufacturing and marketing in India which made Menzel India a winning combination.

It is the blending in of internationally proven textile processing technology that's acclaimed in several world markets and the in-depth local expertise

and experience of textile processing needs and dynamics that's acquired over three decades by the Indian team. With these distinct competencies brought together, Menzel Engineering India Pvt. Ltd. offers discerning customers across the Indian textile industry a range of solutions that's innovative and yet customised, advanced yet affordable. Menzel India furthermore, guides every customer every step of the way, right from machinery selection to skillful and accurate installation and commissioning to dependable and prompt maintenance. Needless to say, Menzel India offers the best of technology, know-how and service to ensure you the best ever combination of productivity and profitability.



Directors from left to right : Harish G. Mehta, Dhaval Gandhi, Peter Menzel, Constantin Menzel.

P RODUCT PROFILE

Menzel Wet Textile Processing Range includes:

Chainless Mercerising Range
Chain Mercerising Range
Combi Mercerising Range
Bleaching Range
Multi Chamber Washing Range
After Dye Washing Range
After Print Washing Range
Singeing Desizing Range
Cold Pad Batch Dyeing Range
Drum Washer



Chainless mercerising Range



Chain Mercerising Range



Combi Mercerising Range



Bleaching Range



After Dye Washing Range

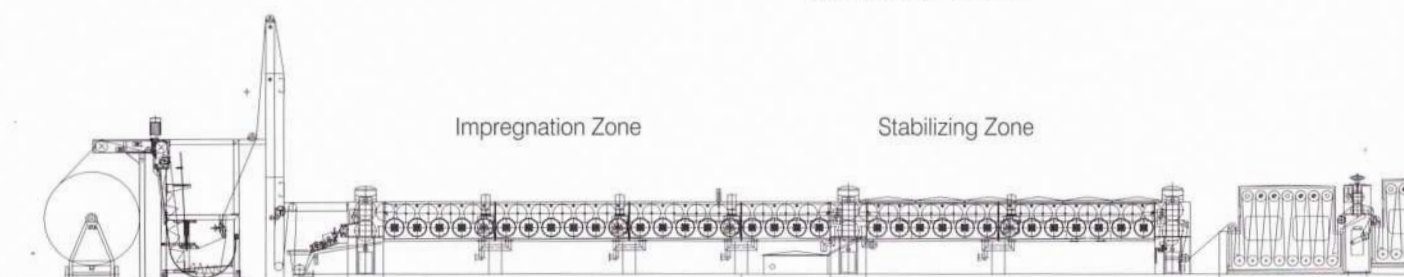


Drum Washer

MENZEL Mercerizing



Chainless Merceriser



Chainless, Chain and Combi Mercerising Range



The purpose of mercerisation is to improve dyeability, dimension stability and luster.

Menzel India offers three types of Mercerising Range to suit customers' specific requirements for light, medium or heavy woven fabrics. Menzel mercerising machines include Chain, Chainless and Combination of Chain and Chainless Mercerizing Range to choose from for your specific requirements.

In addition to permanent luster, the mercerising process also showed additional advantages:-

- Increased dyeability by approx. 30%.
- Elimination of dead and unripe cotton.
- Improvement of dimensional stability in warp and weft direction.
- Increase in tensile strength.
- Saving in resin.
- Improvement of appearance of the fabric.

The mercerising process is considered as one of the most important and most valuable steps in wet processing. Basically mercerisation is done in 3 steps as follows:-

- Impregnation of the fabric with caustic e.g. reaction by swelling of the cellulose fibre.
- Stabilization of this status by treatment with hot water.
- Elimination of the residual caustic soda on the fabric by washing / rinsing.

The process of mercerisation and stabilization have to be affected under controlled tension as the swelling starts immediately after contact with lye and therefore the lye must be distributed evenly for equal swelling. The following factors have influence on the mercerising result:

- Concentration of caustic soda.
- Temperatures for mercerisation and stabilization.
- Reaction time for mercerisation and stabilization.
- Tensile strength & the force acting against the tendency of the fabric to shrink.

Normally mercerising process is carried out by cold mercerising with temperature lower than 20°C and hot mercerising at 60°C.

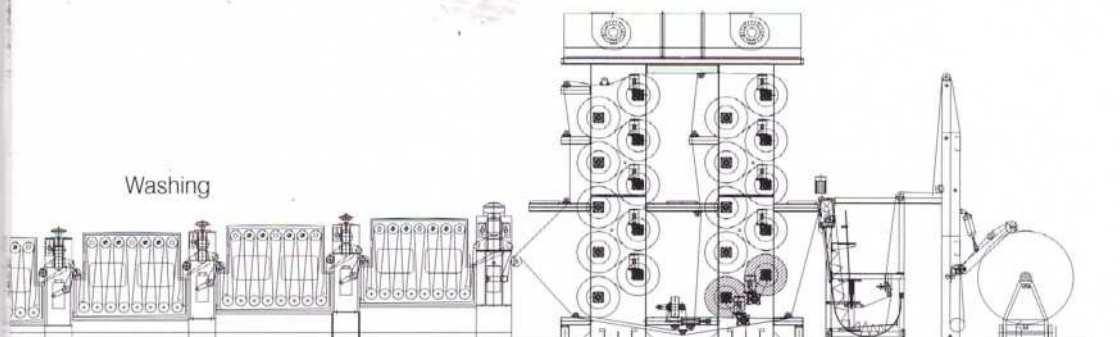
The stabilizing process is run at a temperature of approx. 85° C. The throughput of hot water must be adjusted in such a way that the concentration of weak lye slowly reduced to approx. 8. Be when leaving the stabilizing compartment. After heavy squeezing fabric enters stabilizing compartment as this reduces the amount of lye to be washed out.

We normally recommend to mercerise the fabric after desizing and washing or after scouring and bleaching. It is advantageous to mercerise after desizing as residual alkaline contained in the fibre could be used for scouring.

The Process:

For light and medium fabrics, the intensive impregnating process is followed by the reaction process and the dwelling process. For heavy fabrics the double impregnation process is followed by reaction and then the dwelling and stabilizing process. In Combi Merceriser after the mercerising section there is a stenter section with chain followed by stabilizer.

In the Chain Merceriser, the fabric is dipped into caustic saturator tank and squeezed with heavy padder and shrunk on timing drum, afterwards gradually stretched and washed on clip stenter.



MENZEL Mercerising



Chain Mercerising



for lightweight and heavy woven fabrics



Then comes the conventional stabilizing compartment with chainless guidance. And finally a high efficiency washing and neutralizing zone.

Impregnation and Mercerising compartment:

- Immersion trough for wetting for wet in wet process.
- Expanding unit for stretching.
- Heavy duty 12000 kg. squeezer for reducing moisture.
- Mercerising compartment in stainless steel with soft rubber covered top 350Ø mm and stainless steel clad bottom 323Ø mm rollers, working as light squeezers for best liquor exchange.
- The compartment is built by sections with 4-6 bottom rollers each and up to 36 rollers in total according to max. production speed. Additional direct drive support the fabric transport.
- Overflow container mounted underneath the first part of the compartment.
- Distributing pipes for even distribution of lye which are connected to the circulation and reconditioning system.
- Lye collecting tank.

Impregnation section construction:

- Stainless steel housing segments construction.
- All bottom rollers are stainless steel clad construction with flange type sealed bearings.
- Two bottom rollers support a rubber roller which forms a pool of liquor for better impregnation.
- Rotary drum filter with circulation pump for lint removal.
- Indirect heating of caustic tank for hot mercerisation.

Stabilizing compartment

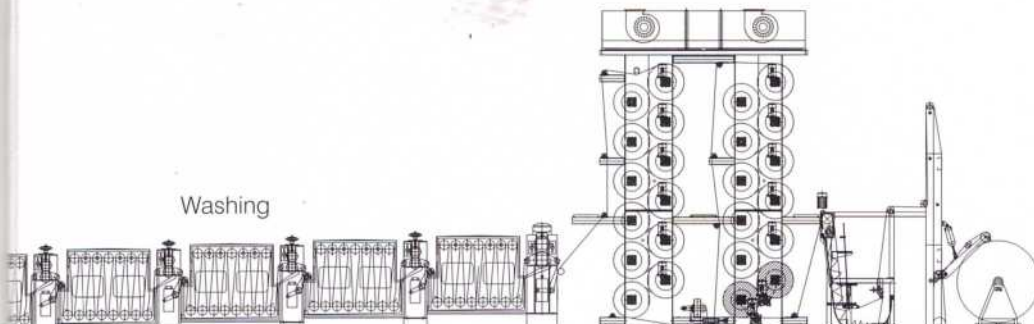
- Heavy duty 12 ton squeezer for efficiently reducing the lye amount on the fabric.
 - Closed compartment in stainless steel with soft rubber covered top and stainless steel clad bottom rollers.
- Spray pipe system with individual pumps connected to small tanks with lower concentrated weak lye and controlled hot water from the extraction compartment.
- Heavy duty 2 roller squeezer for reducing moisture.
 - Washing compartments with squeezers.
 - Counter flow arrangement within the washing line. Neutralisation compartment with controlled acid supply. AC-drive system with frequency and process control.

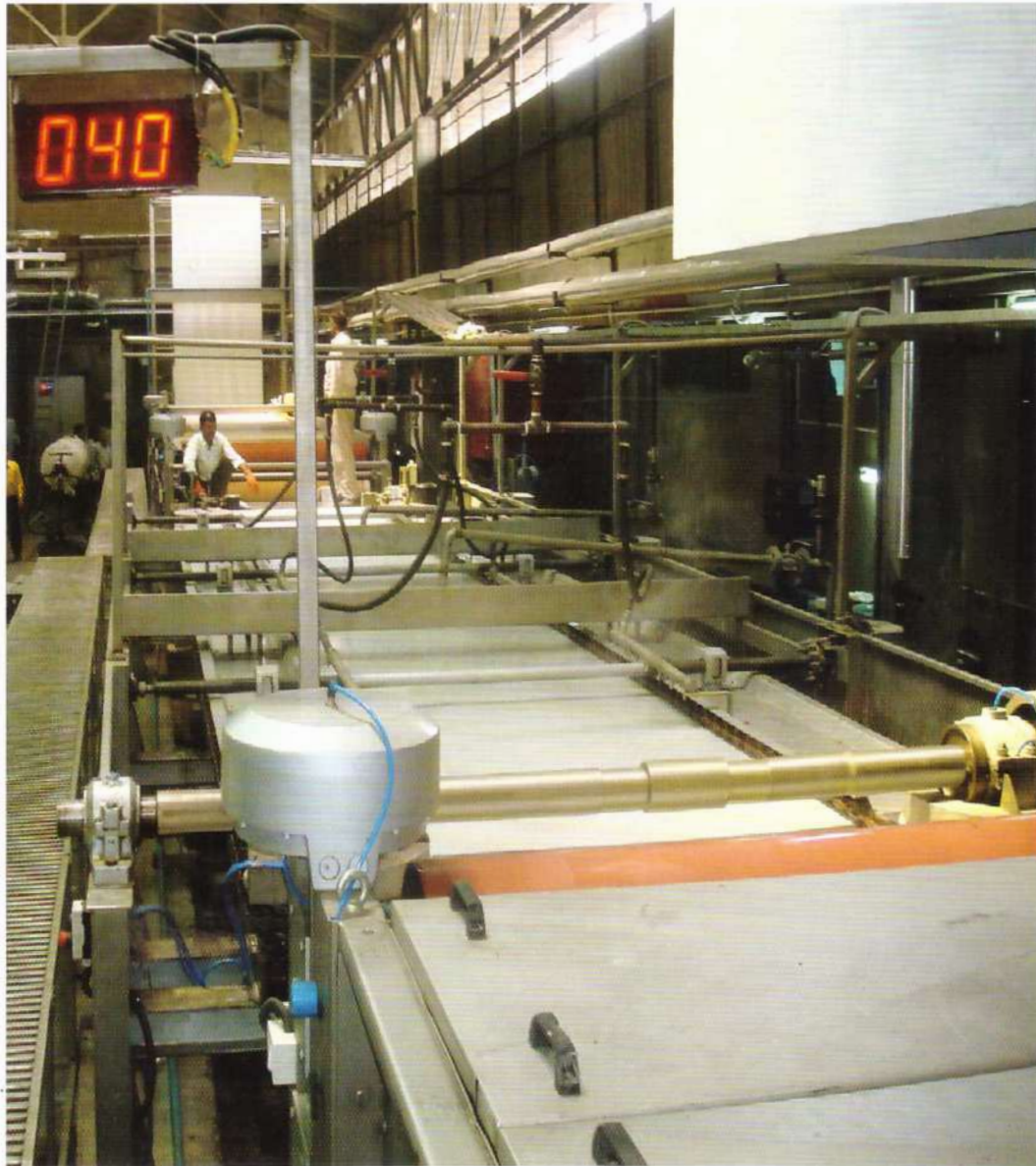
Stabilisation:

- Stabilisation sections are divided into sections to suit requirement.
- Contact fabric flow gives minimum width shrinkage.
- High efficiency squeezer at the outlet.
- Fresh water feeding when necessary.
- Use of washed water from subsequent wash boxes.
- Pneumatic lifting of set of top rollers for fast threading of fabric.

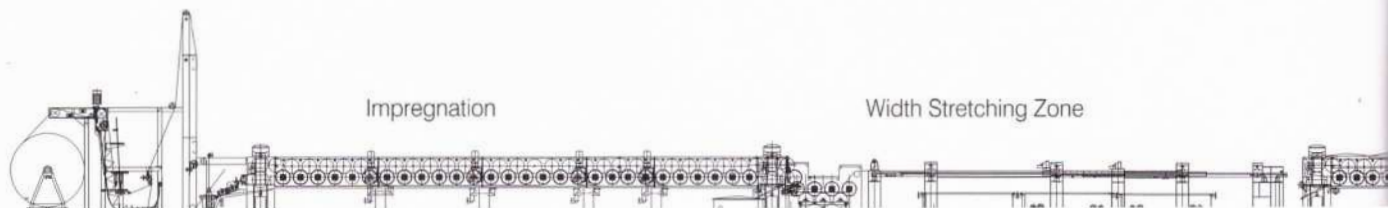


Washing





Combi Mercerising



Intensive Impregnation Wet-on-wet Mercerising



Hot Impregnation:

With faster penetration of lye with hot impregnation on the swelling behaviour of the fabric is better and gives better dimensional stability compared to cold impregnation. Uniform swelling renders dyed fabric a more equal appearance. With the wet on wet method, you need only shorter impregnation chamber, lower lye content and saves water. Thus Menzel Combi process gives better mercerising with saving in lye, water and steam.

Dwelling:

Hot mercerising only requires half the time of cold mercerizing.

Wet-on-wet Mercerising:

Desized impregnated fabric can be mercerised right away on our wet-on-wet mercerising range. The number of washing compartments depends on the quality of fabric and the production required. In cases where the fabric to be mercerised after scouring, wet-on-wet mercerising is possible using only one pre wash tank. Washing after mercerising remains standard. On account of the price factor wet-on-wet mercerising process is recommended

Caustic management for wet on wet Mercerising

The used process lye is collected and filtered, the concentration checked and high concentrated lye is added. The lye is then pumped to the distributing pipes inside the compartment.

The concentration is checked with an Aerometer, which can work for cold and for warm lye. The concentration has to be set higher with heavier fabric when there is an exchange of liquor in the fabric less than 90% so that the fabric has the necessary 240 g NaOH/kg fabric.

The counter current washing water from the lye extraction compartment is collected and pumped into the spray system within the stabilizing compartment. Separate little tanks at the bottom collect the water and individual pumps bring the water to spray pipes over higher concentrated areas. The final concentration at the entry of the stabilizing compartment can be checked and regulated before sending the weak lye to recovery plant.

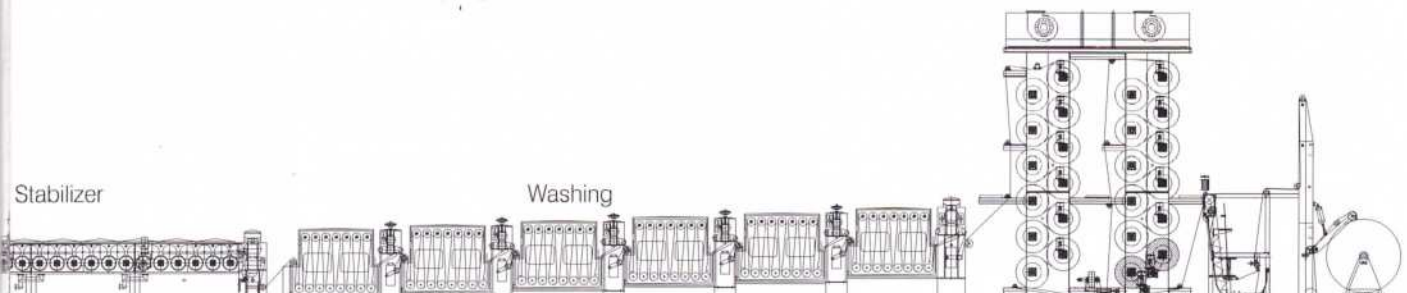
Salient Features:

Wet on wet mercerising with automatic caustic strength monitoring and controlling.

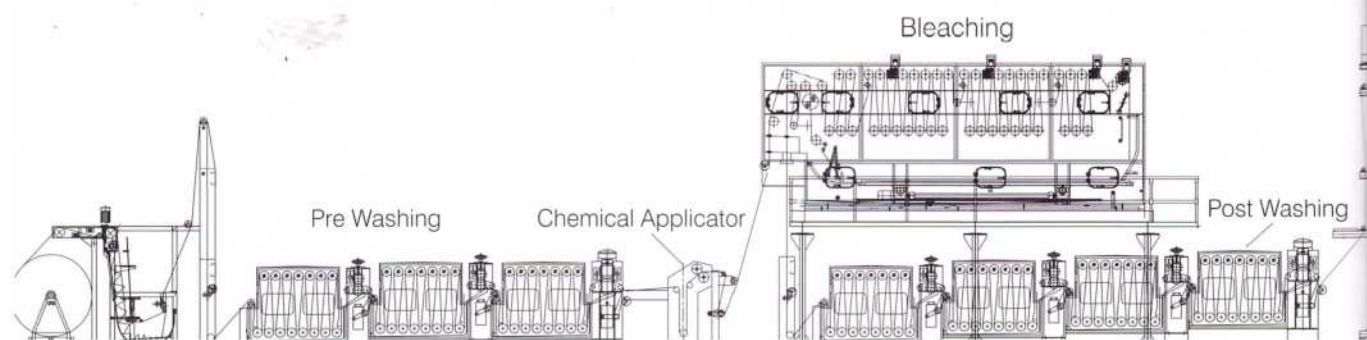
- Automatic filtering arrangement and circulation system for strong lye in impregnation.
- Cascading washing of fabric in stabilizer.
- Minimum change over time.
- Intelligent control system by industrial PC & PLC System.
- Possibility of controlling lye strength going to caustic recovery plant.

Stabilizer

Washing



MENZEL Bleaching Range





Bleaching Range for woven and knitted fabrics

Prior to the actual bleaching of fabric a proper desizing process to remove size is recommended.

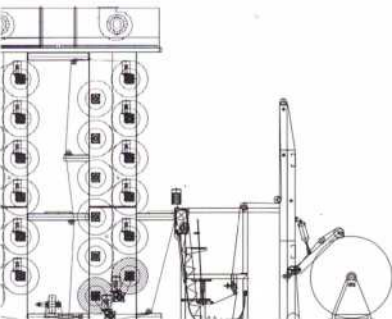
Today, it is known that raw cotton has a large bandwidth in terms of containing parts of magnesium, iron and calcium. This can very effectively be prevented by different extraction processes applied during the stage of pre-treatment. The aim of bleaching textiles and fibres is to convert coloured accompanying substances of fibres into uncoloured material and alter them in a way so they can be washed out. While treatment of textiles in accordance with the textile's intended utilisation, the degree of whiteness should be high enough and spread evenly across the entire web width, if possible the textile substrate should not be damaged, the degree of whiteness should remain stable during storing and the absorbency should be high and even.

Desizing

Dry pre cleaning and desizing of grey fabric are the first steps of pre treatment. Lint and fibres will be removed, the fabric is saturated with desizing chemicals and by rotation over several hours, the sizing is decomposed. Already during the first step of the pre treatment we pay a lot of attention to even web treatment in terms of width, length and process time. Machines that come into operation are beating and brushing units, singers, saturators, automatic dosing systems, winders and the retention station.

Bleaching with hydrogen peroxide

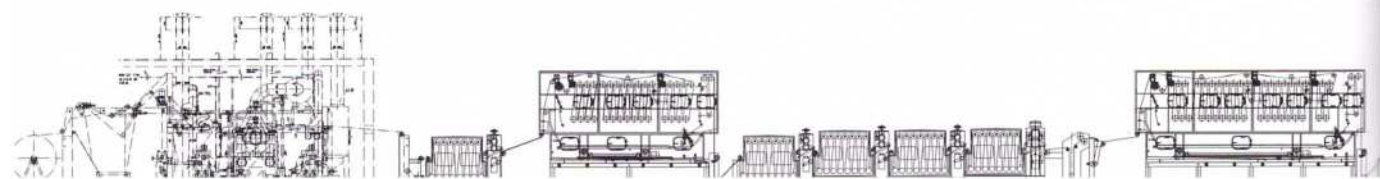
Nowadays, using hydrogen peroxide holds an outstanding position and plays a superior part of bleaching cotton and regenerative cellulose fibres amongst the known bleaching processes. While applying peroxide bleaching, the supply of oxygen has to be slowed down in order to handle the unstable, aggressive molecule and its variations the right way. In order to achieve a perfect bleaching result the utilisation of stabilizer, besides products such as alkali, low form emitting tensides, wetting agents and complexing agents is necessary.



MENZEL Bleaching Range



3 Stage Bleaching Range



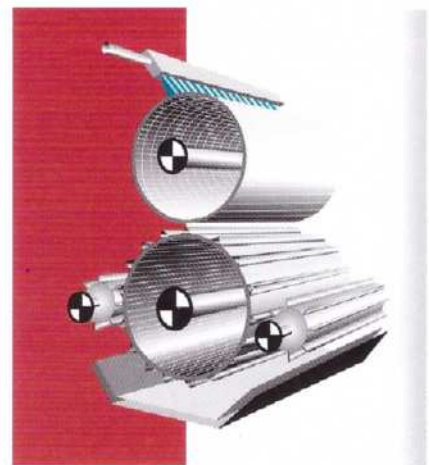
Bleaching Range for woven and knitted fabrics



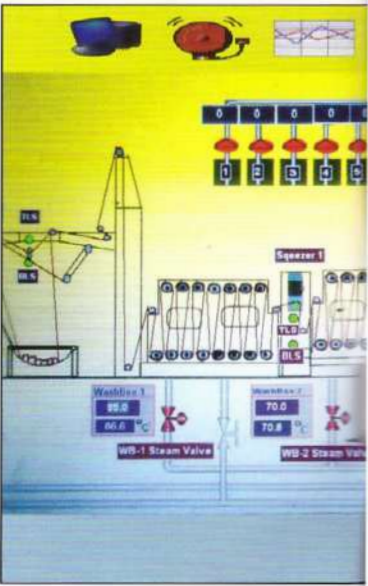
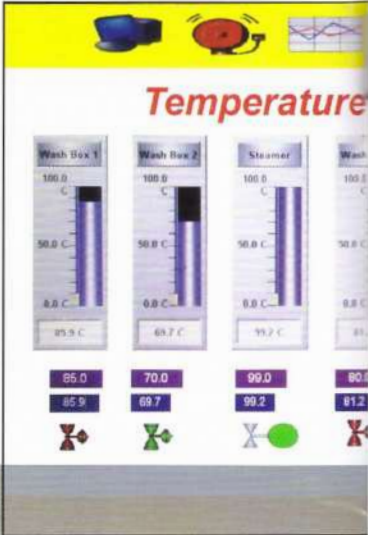
Bleaching Range for knitted fabrics

Combined scouring and bleaching

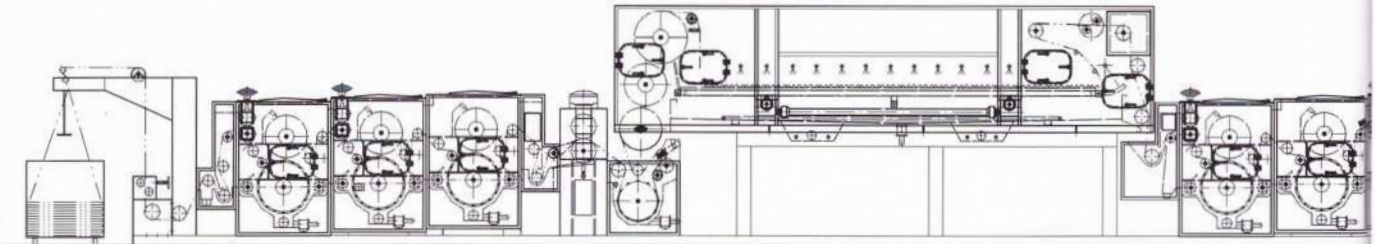
The continuous combined scouring and bleaching process or one step process in which caustic and peroxide is used together. This process needs smaller length of machine. However it needs special care in the machine design which eliminates iron impurities generated within the machine leading to catalytic damage to cotton fibre. In the Menzel machine we have taken care by providing indirect steam heating in the wash boxes which avoids iron impurities coming from steam pipeline especially after long storage or weekly holidays. We are using complete stainless steel entry, exit and mangle frames to avoid pin hole phenomena.



MENZEL Bleaching Range



Opti Steam KF Bleaching Range



ECOMAX Controlled Liquor Application

Menzel-Ecomax Impregnator

The Impregnator is provided with passage of fabric through narrow shafts of turbulence to achieve intensive liquor exchange and uniform distribution of chemicals. The chemicals are penetrated to the core of the fabric for better performance and low chemical consumption. The small quantity of liquor ensures fast liquor refurbishment and short adjustment time at process change. The squeezer is made from chemical resistant rubber rollers and its pressure can be controlled and adjusted so that it ensures:

- That the fabric always carries enough liquor which is required for one step scouring and bleaching.
- There is no wastage of chemicals.
- By knowing the squeeze pressure employed, reproducibility of process is guaranteed.

Menzel Lines with continuous steamer for big and medium production quantities.

After passing through the tensionless tight strand fabric guide system, the fabric package will be stacked on to the slat conveyors, which is of special importance. The slat conveyors carry the fabric without additional compression through the reaction zone. During the process, the points of contact alternate with the fabric, which allows the saturated steam to evenly pass through which supports a uniform liquor dispersion.

Working principle of Menzel Conveyor

The walking conveyor consists of two separate stainless steel grids which are in an intertwined eccentric motion. Depending on the preset

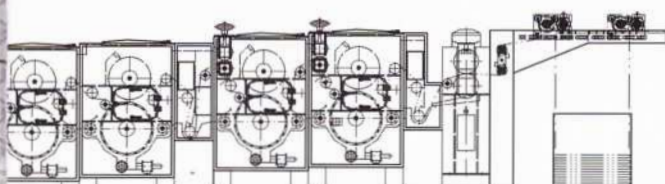
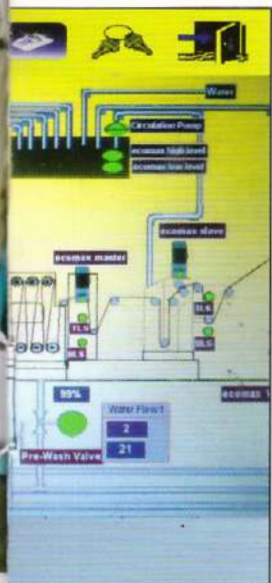
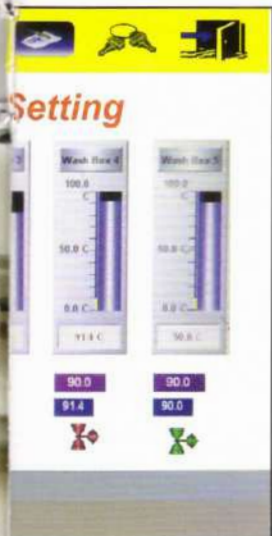
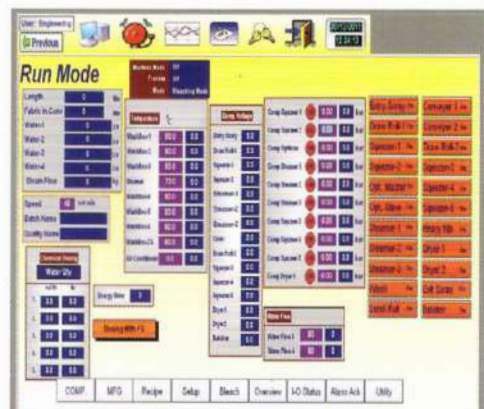
dwelling time the grids transport the material parcel completely tension free through the compartment. This Menzel development works satisfactorily for more than 30 years in different applications. In contrast to the classical roller bed there is no danger of web deformation by compression in between the individual rollers. The optimum degree of saturation and the uniform temperature of the saturated steam create uniform bleaching effect.

In the Menzel Steamer the steam is passed through water bath which does two functions:

- Generating saturated steam.
 - Eliminating iron impurities coming from steam.
- The optimum degree of saturation and the uniform temperature of the saturated steam create uniform bleaching effect.

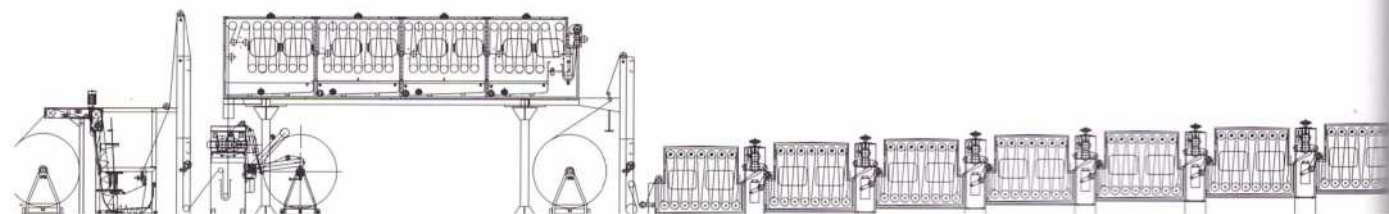
The other advantages of Menzel Steamer:

- Gentle conveying
- No metal abrasion
- Uniform bleaching
- No fold marks
- Very low maintenance
- Penetration of steam
- No dry-up marks





Pad Steam Dyeing

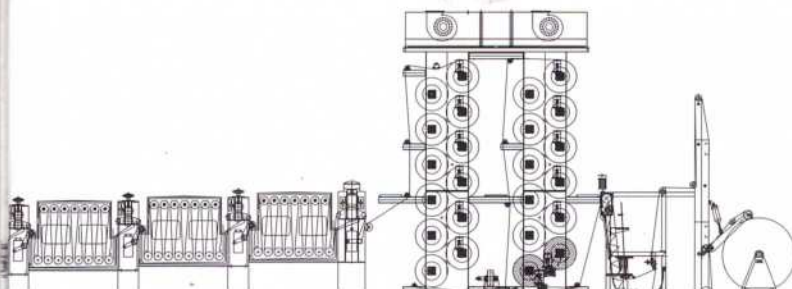


Efficient and profitable OPTIDYE - PS ongoing highest precision

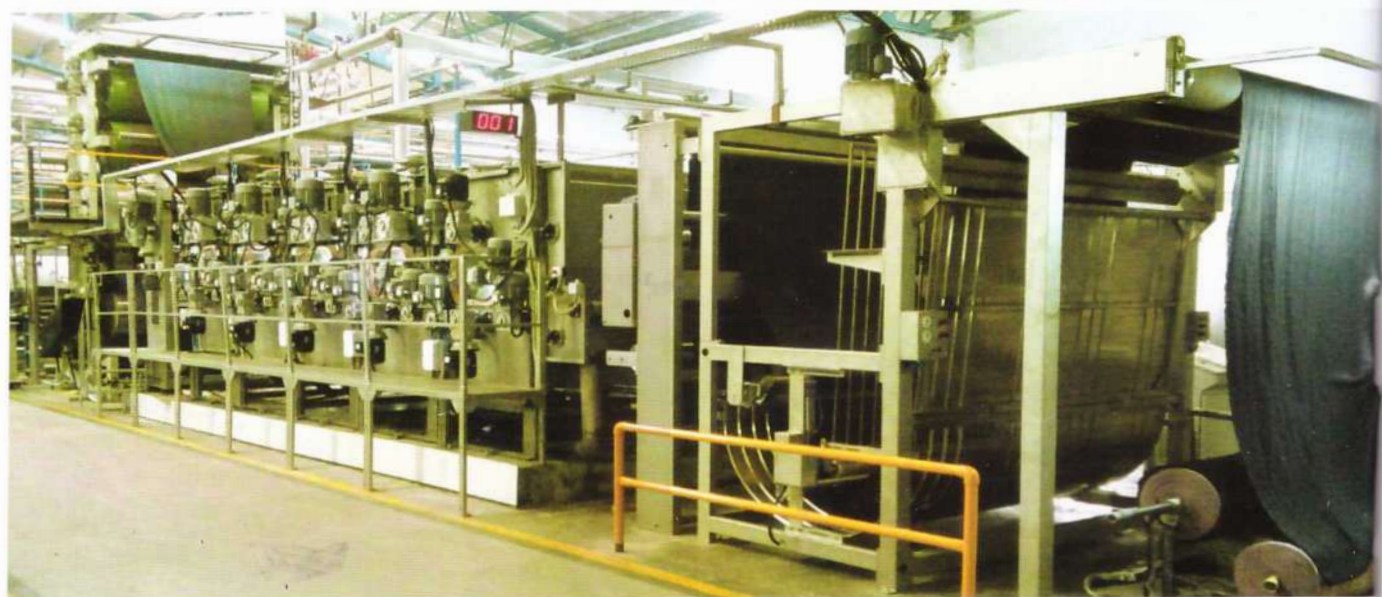


Menzel-OPTIDYE-PS

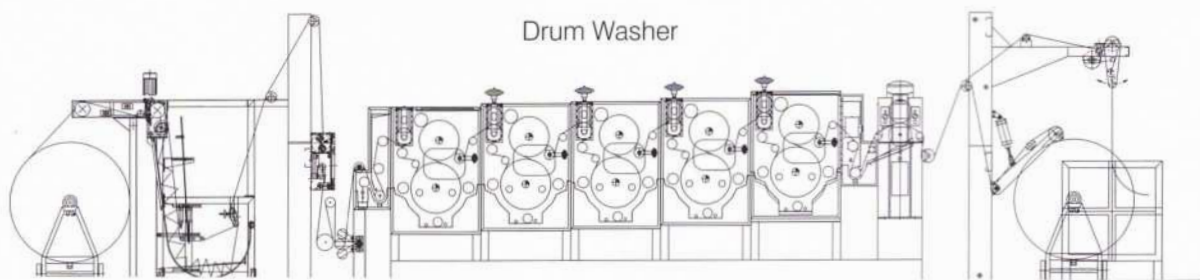
- Fabric specific liquor application in the OPTICOLOR due to adjustment of the S-Roll deflection curve to a parallel, concave and convex shape combined with highest line pressure control range.
- Wet-on-wet application by means of kiss roll system possible.
- OPTISTEAM - air-free steamer due to integrated steam saturation combined with a vertical steam inlet.
- OPTISTEAM - steamers are energy optimised by means of partial insulation and automatic steam quantity control.
- Web tension control throughout the entire dyeing process.
- Modular design of machine components permits the execution of differing requirements regarding process technology.
- Fabric inlet & exit made of stainless steel.
- OPTIDOS - online dosing system for continuous dyeing liquor and process relevant chemical supply to the range.
- Integrated process control system, process analysis and reporting.



MENZEL Washing Range



Drum Washer



Fibre preserving in every phase OPTIWASH and OPTISPLASH

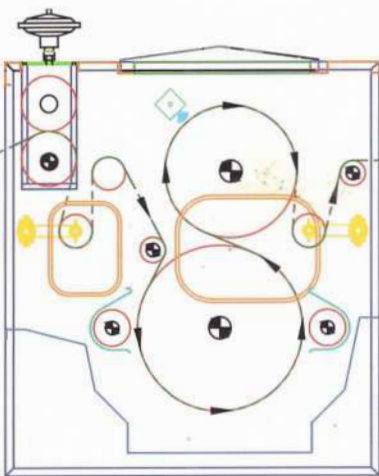
Menzel-After Print / After Dye Wash

Fabric determines the range. Whether dimensionally stable or highly elastic, Menzel offers a wide palette of system components for every task. At the same time process conditions such as retaining time, high rate of liquor exchange and tension controlled web guiding will be optimally fulfilled. The excellent technical standard leads to a low maintenance intensity and reduced production costs.

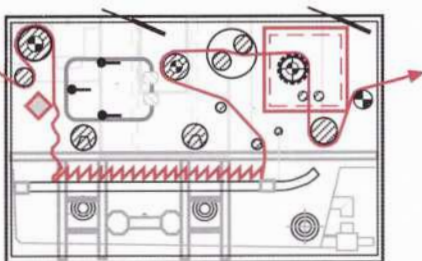
OPTIWASH-L-Washing compartment with vertical cloth travel combines a diffusion washing process and a high liquor exchange in compact design. An immaculate web guiding will be achieved by stainless rollers with a diameter of 200 mm, upper roller drives and electronic synchronisation of all drives. Differing types of squeezing devices additionally support wrinkle free web run even when processing elastic fabrics.

OPTIWASH-TW-Tower washer reaches larger specific washing performance because of increased profusion of the web due to higher rate of liquor exchange. Furthermore, in order to intensify the corner washing, squeezing devices are integrated into the system. The angular rising web guidance via 200 mm stainless steel rollers, short roller distances and support drive permit intensive washing of even delicate fabric qualities reduces required space.

OPTISPLASH-Perforated drum washers are available for highly elastic knitted and wove fabric. This washer combines two washing systems - the intensive liquor treatment applied via two patented SPLASH ROLLERS on specially constructed bottom drum and the liquor circulation by means of wide-beam nozzle system on top drum. During the intensive washing liquor treatment, the fabric will be guided by perforated drums.



Drum Washer



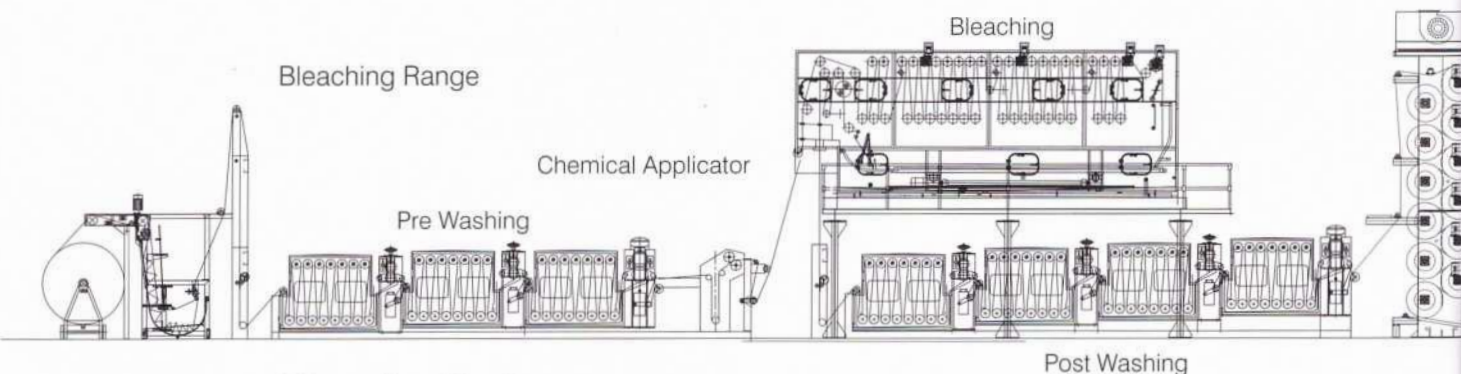
Monsoon Spray

Menzel Wet Processing Plants

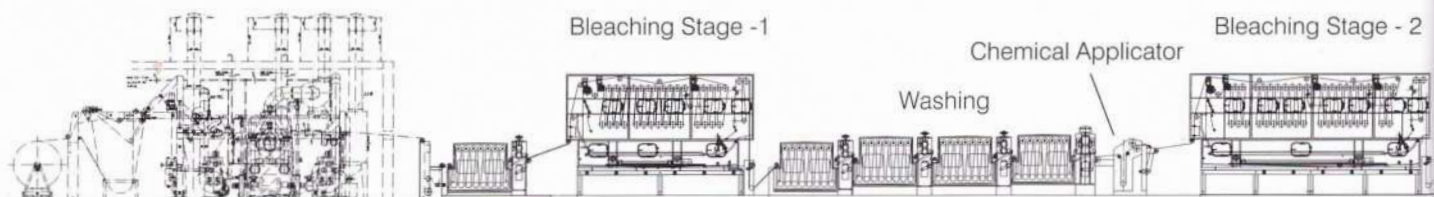
Singeing Desizing Range



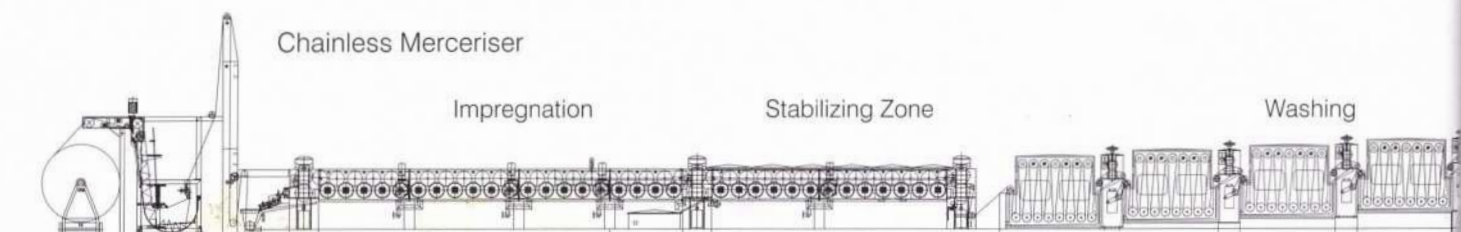
Bleaching Range



3 Stage Bleaching Range



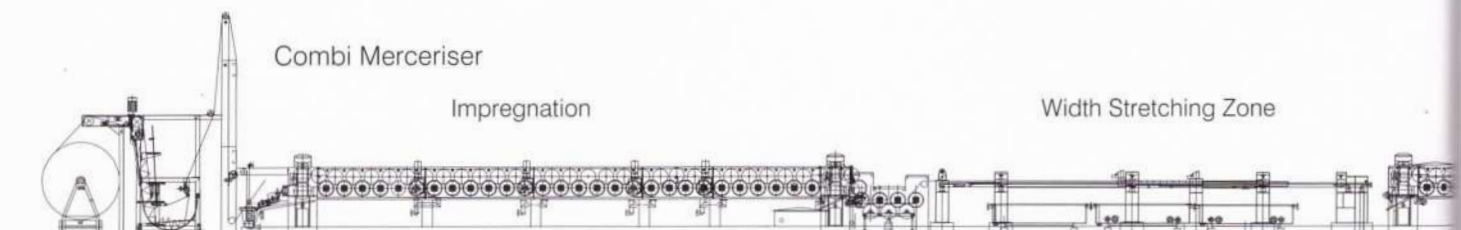
Chainless Merceriser



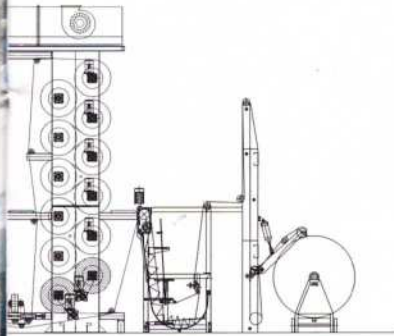
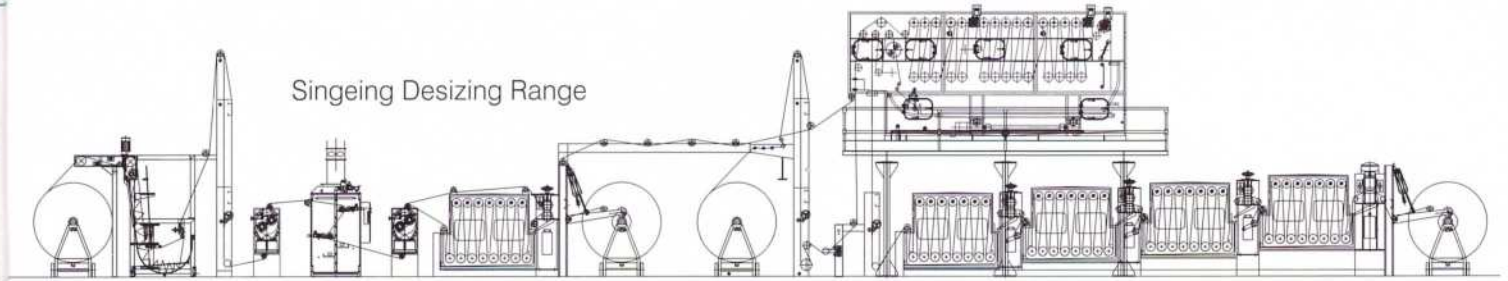
Chain Merceriser



Combi Merceriser



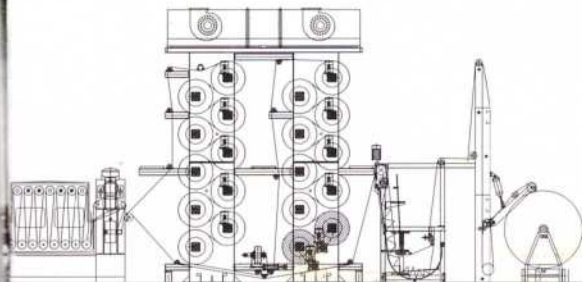
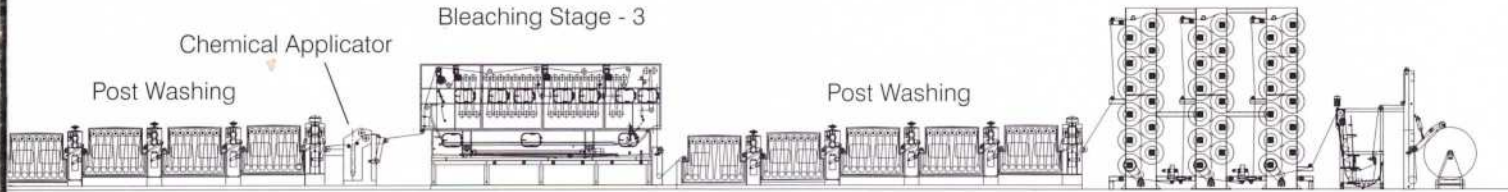
Singeing Desizing Range



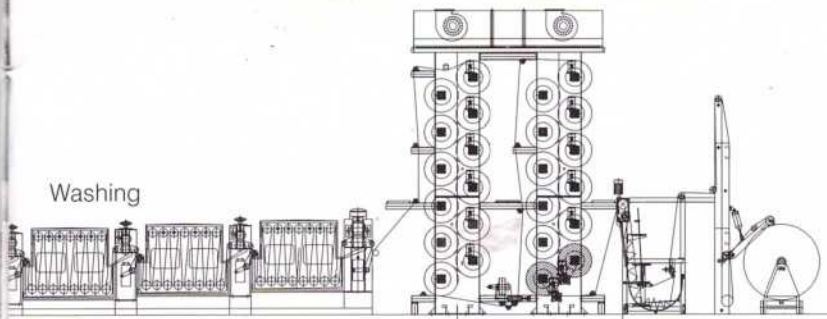
Bleaching Stage - 3

Post Washing

Post Washing

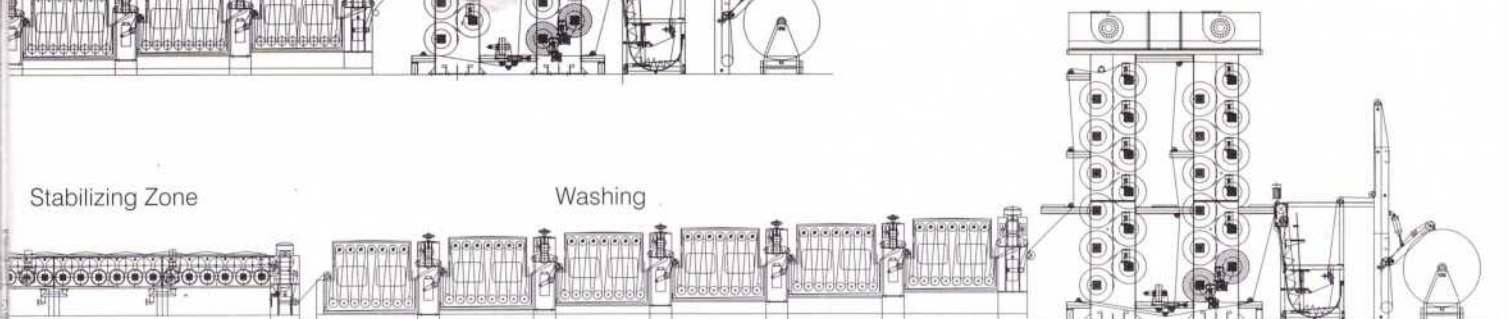


Washing



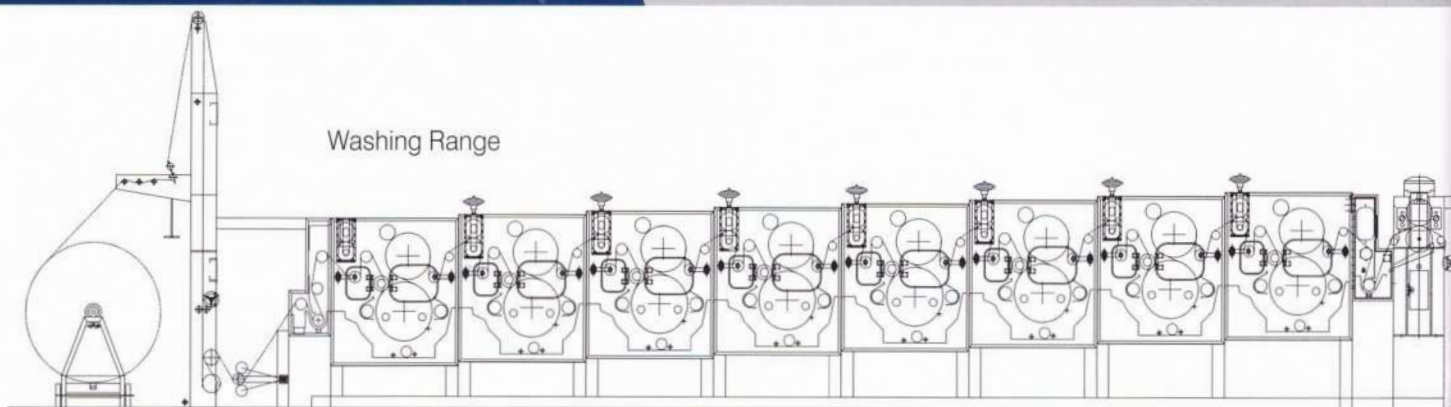
Stabilizing Zone

Washing

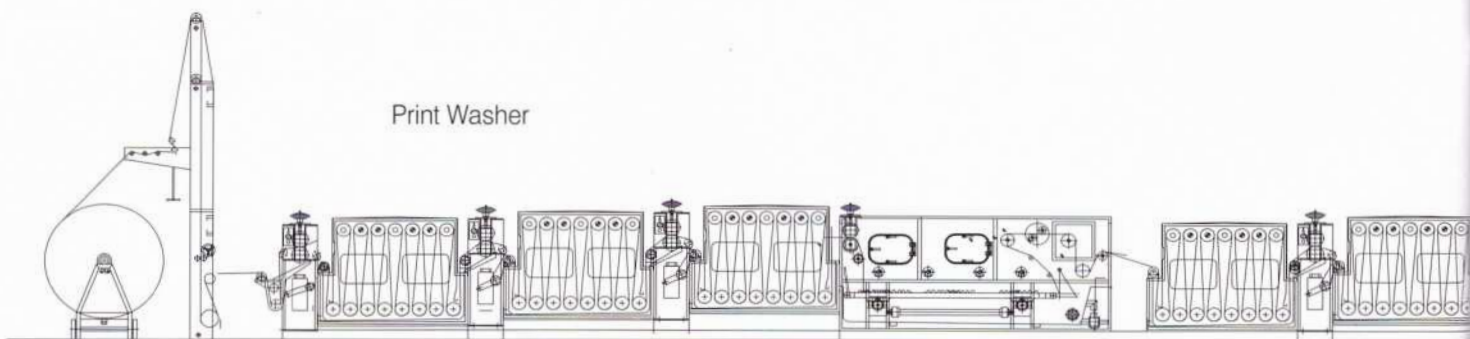


Menzel Wet Processing Plants

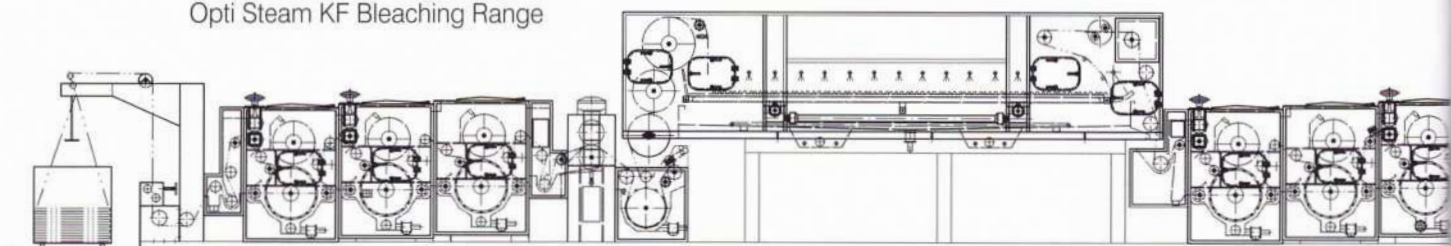
Washing Range



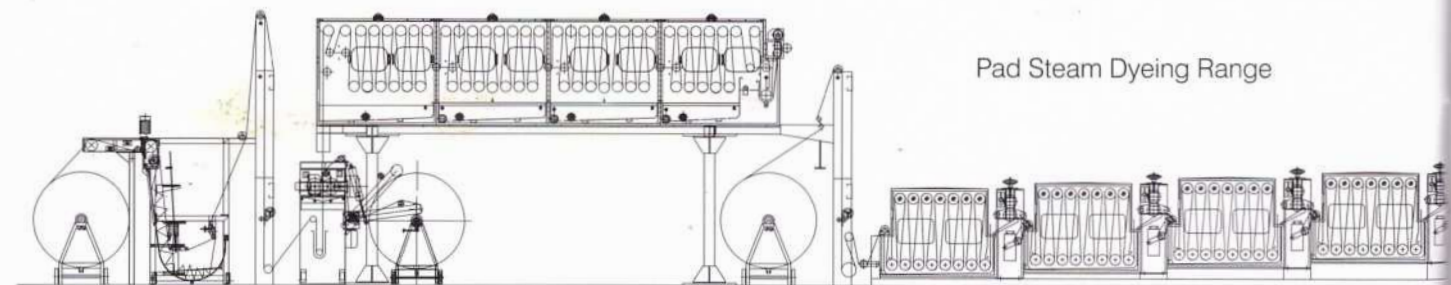
Print Washer



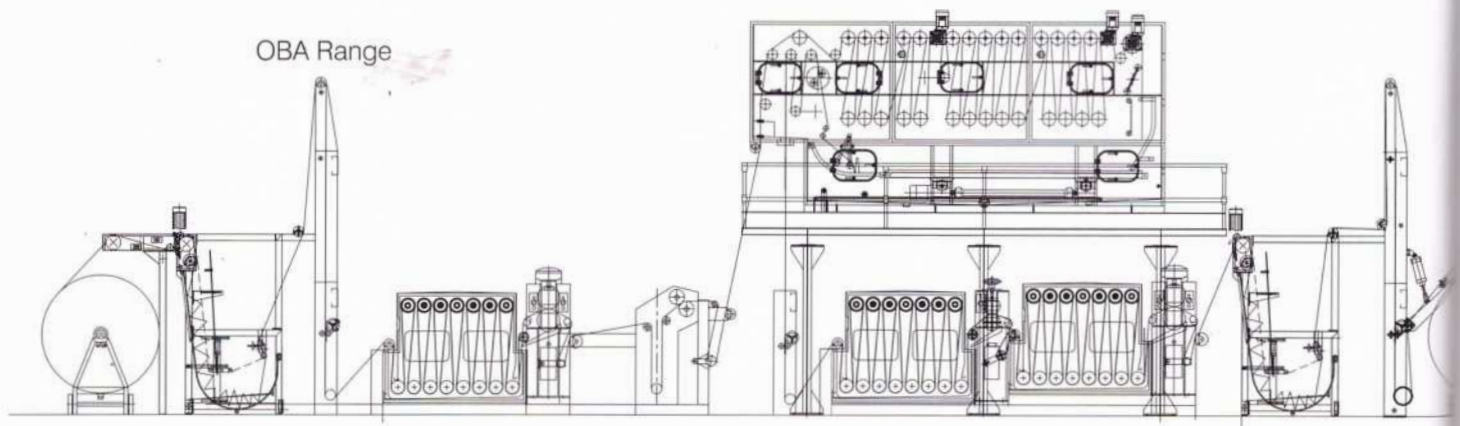
Opti Steam KF Bleaching Range

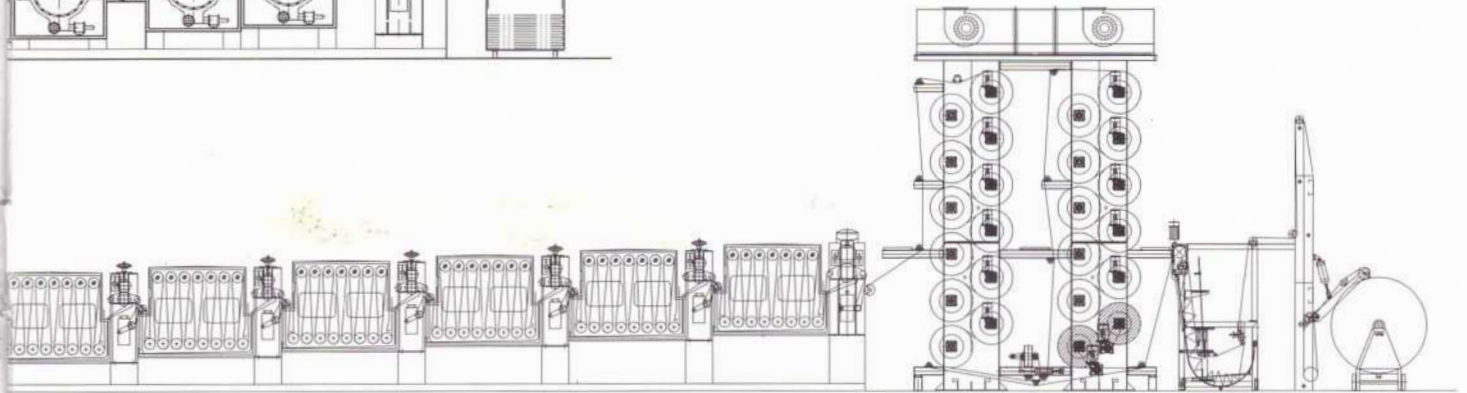
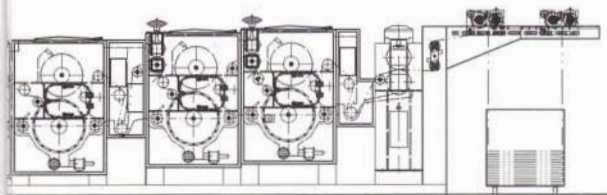
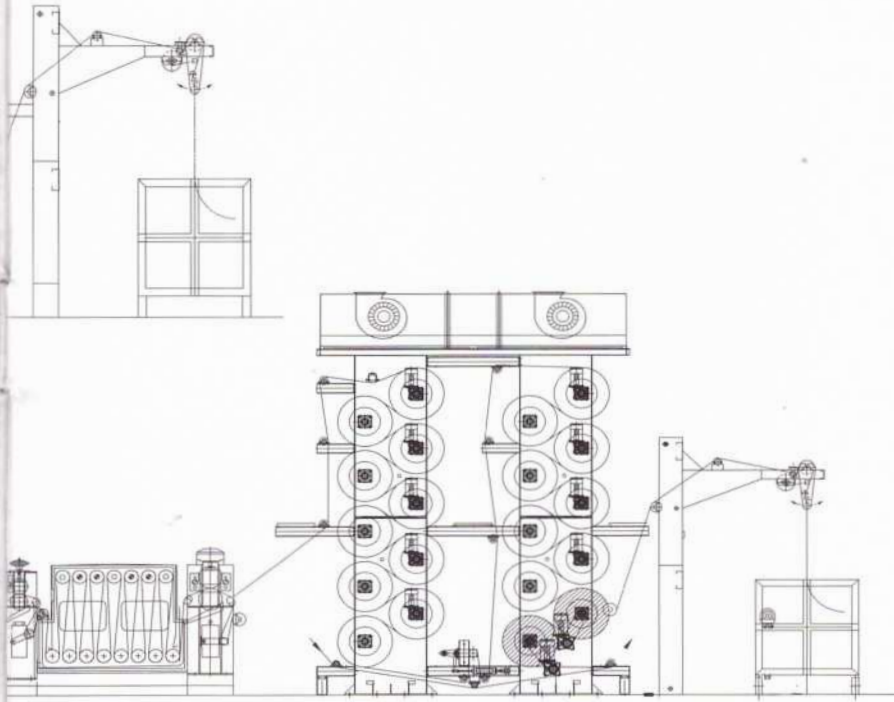


Pad Steam Dyeing Range

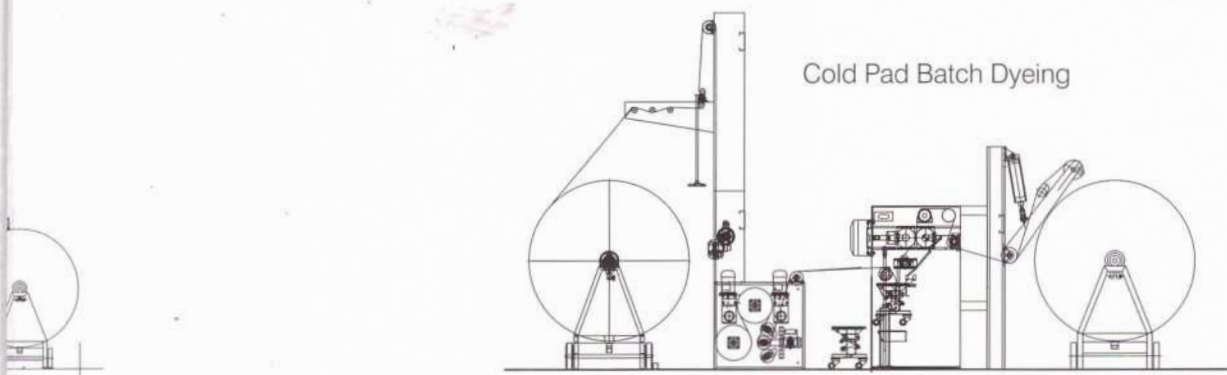


OBA Range





Cold Pad Batch Dyeing





MENZEL Engineering India Pvt. Ltd. A German Joint Venture Company

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