

efi MEZZERA DENIM LINE

Rope Dye, Loop Dye, Denim Flat Finishing



Continuous
indigo rope
warp dye range
denim fabric
finishing
range

MEZZERA Worldwide

MEZZERA textile machinery manufacturer and Italian reference into the Textile business since 1934, designed and developed all the kind of wet and dry finishing treatments, cooperating with major international partners. MEZZERA, known in the world of wet treatment thanks to their pre-treatment and after printing or dyeing lines, is the Italian leading Textile provider specialized in Dyeing and Finishing solutions.

Since 2009 MEZZERA is part of REGGIANI GROUP which includes Reggiani Macchine, Jaeggli Meccanotessile, RPR and MTS. Today MEZZERA is the leader in the Italian market for the continuous washing, bleaching and mercerizing plants for any kind of fabrics.

Since 2015 MEZZERA is part of EFI (Electronics for Imaging, Inc).

1934 MEZZERA established in 1934, had designed and developed all kind of wet and dry finishing treatments, cooperating with major international partners

2009 MEZZERA is part of REGGIANI GROUP which includes Reggiani Macchine, Jaeggli Meccanotessile, RPR and MTS

2015 MEZZERA is part of EFI (Electronics for Imaging, Inc)



INDIGO DYE

Loop, Slasher or Rope?

Introducing and Carrying a new customer into the indigo world the first and most important question is a must for us: "What does customer need and why he needs it?"

WHY A ROPE DYEING RANGE?

- HIGH PRODUCTION: dyed cotton in Kgs/h are more or less 2 to 3 times other ranges
- LOWER SENSIBILITY: in cotton variations
- MASSIMIZE PRODUCTION: suitable for reduced shade ranges in order to massimize the denim production (no stops between dyelots)
- EASIER: to be managed by operators
- HIGH FIXATION RATE: wider and longer oxidation allows better brightness and color fastnesses

NEGATIVE OVERVIEWS:

- LABOUR COSTS: minimum 2 times the labours involved in Dyeing-Rebeaming-Sizing operations
- INSTALLATION SPACE: 2 to 3 times a slasher or loop range
- SHIRTING or FINE COUNTS: dyeing range between Ne 6/1 to Ne 30/1 max
- FLEXIBILITY: twice bigger in terms of liquor and cotton loads
- SUSTAINABILITY: high chemical water and steam consumes

WHY A SLASHER DYEING RANGE?

- HIGH FLEXIBILITY: in terms of final products yarn counts, chemicals and processes
- SMALLER: 20% more compact and being all-in-one it could preserve up to 35% of the total space
- CHEAPER: machinery daily costs and operating costs are lower up to 20% than a rope range
- HIGHER EFFICIENCY: products are ready to be woven
- MORE SUSTAINABLE: less chemicals, less liquor up to 35% minimum compared with a Rope

NEGATIVE OVERVIEWS:

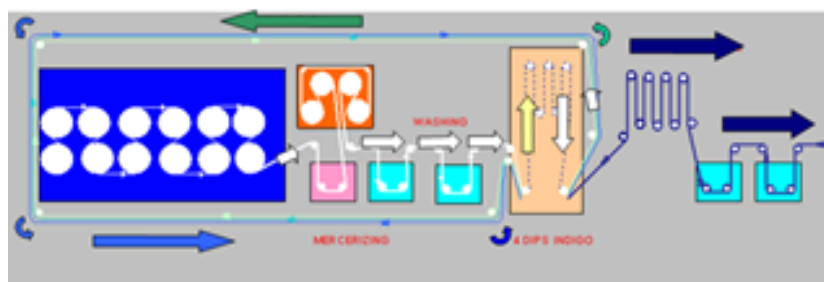
- SENSIBILITY: experience on this range and precautions are required
- LOWER OXIDATION: skying are lower than a rope dyeing range
- COTTON WASTE: in case of stops and during the dyelot changes, machine has to be stopped losing the cotton load inside
- CENTRE-SELVEDGE: if not well settled especially on thick counts sometimes could generate centre-selvedge shading differences

Loop Technology

The loop technology has been used for many years since 1980's, as a low space and flexible solutions for indigo denim mills.

Mainly made with one or two indigo boxes in these years the market grew and a product that started as a "mono-shade" product become every single season, fashion and trend requested widening the colors, intensities and shades, changing so the world of machine manufacturer with the new Looptex range by Mezzera we combined advantages of the old Loop machines with the latest chemical and mechanical Technology achieving darker casts, deeping indigo penetrations, and improving fastnesses exactly as ROPE and SLASHER ranges, keeping the high advantages and flexibilities of the LOOPTEX TECHNOLOGY by Mezzera. We adapted it on the trendy market requests of today.

Process scheme Loopdye

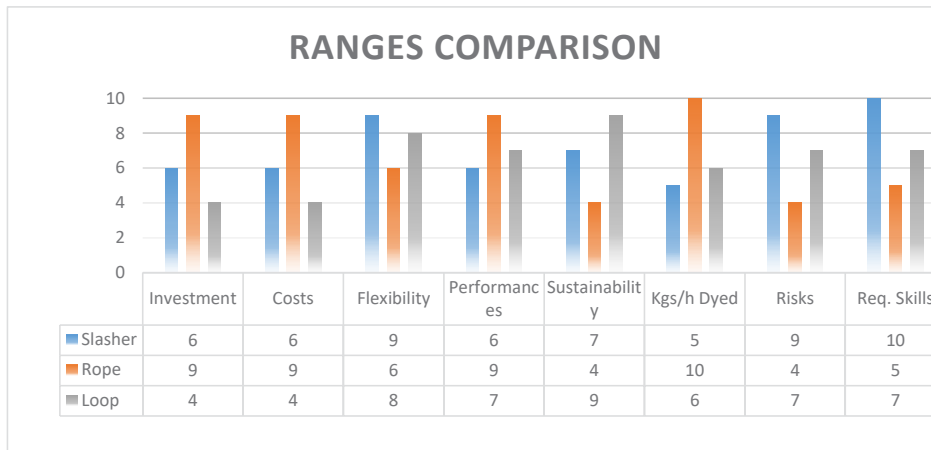


WHY A LOOPTEX DYEING RANGE?

- **HIGHER FLEXIBILITY:** in all the processes, thanks to the small machine size and the SEALED NITROGEN REACTORS (patented) we offer a 360° product, suitable and stable for indigo dyeing between 0.3% to 6% intensity, and sulphur dyeing between pastel colors to deepest black
- **OPERATING COSTS:** less up to 30% due to the reduction of the indigo liquor bath and machine's size up to 20% smaller
- **CHEMICAL COSTS:** thanks to the Sealed Nitrogen reactor up to 40% hydrosulphite reduction
- **HIGH FIXATION RATE:** passing into the oxidation loop many times, fixing rate, intensities and fastnesses are excellent
- **LOWER COTTON LOST:** in case of machine stops the lost load is 25% lower than a standard SLASHER
- **SUSTAINABILITY:** reducing boxes but not the final speed, Water and chemicals consumption, are lower than other ranges
- **SLASHER-LOOP:** customizing the machine on customer requests is possible to use LOOPTEX as a Loop or Slasher process as well
- **HIGHER PRODUCTIVITY:** faster than every other ranges up to 38 m/min

Looptex is a perfect meltin pot of history, technology and experience

LOOPTEX Technology by Mezzera is a perfect example of how an old technology, modified and renewed can be melted into a new product that solves and satisfies all the requests mixing advantages of the latest ROPE and SLASHER technologies.



ROPE DYE

Features

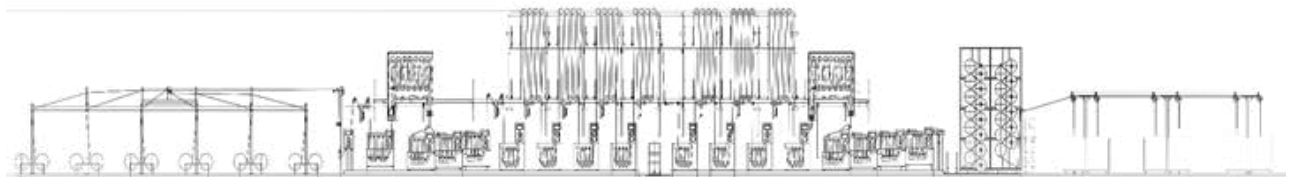
- Working speeds from 30 m/min up to 40 m/min
- Ropes featuring between 24 to 36 ropes, fully automatic coiler controlled by Siemens PLC
- Upper guide rolls with fluted profiles
- Continuous fresh dye liquor bath dosing system based on ml/Kg
- Independent magnetic flowmeters installed on each dye box for a balanced indigo liquor supply

Standard rope dye range (8 Boxes)

The standard rope Dye Range by Mezzera has been developed in order to give you the best solution and flexibility containing initial investment.

Supported suitability and peculiar characteristics:

- Double steamer (bottoming-topping/sulphur color denim)
- Medium-high indigo intensities achievable (4-5%)
- Sulphur bottomed indigo casts all colors
- Sulphur topped indigo casts all colors (last 2 indigo boxes with independent circuit)
- Sulphur dye all colors (last 2 indigo boxes + steamer)



Standard 4.5% Indigo Dyeing Machine set-up (Report by Mezzera)



Ropes scouring preparation



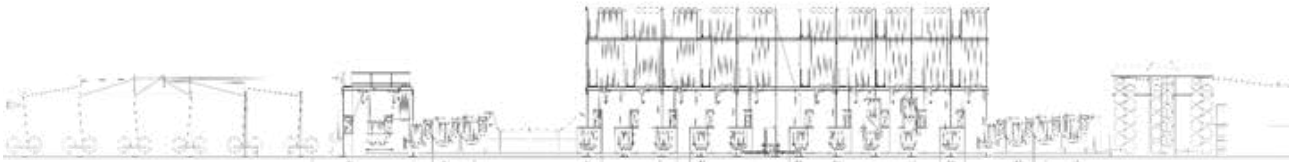
Ropes indigo dyed

Performer rope dye range (10 Boxes: 8 Indigo + 2 Nitrogen reactors)

The Performer Rope Dye Range by Mezzera has been developed in order to give you the top solution in terms of dyeing performances. Thanks to the twin-box equipped with Nitrogen Sealed Reactor, penetrations, fastnesses, washing resistencies and intensities in indigo and sulphur as well.

Supported suitability and peculiar characteristics:

- Ultra-high indigo intensities achievable (5.5-6.5)
- Sulphur bottomed indigo casts all colors
- Sulphur dye all colors (last 2 indigo boxes in nitrogen environment)
- Darker and well fixed sulphur blacks
- Sustainable more than 40% hydro could be reduced during the production
- Speed 35 m/min



The Sealed Nitrogen Reactors keep indigo in LEUCO-FORM (green). During its penetration, giving the possibility to be uniformly diffused into the fiber, reducing also the environmental impact.

N₂ Mezzera Sustainable process 6N₂ sealed reactors

Always thinking about our planet and how we could change it and being greener and greener, Mezzera since 2003 has developed an Indigo dyeing in which the reducing agent (HYDROSULPHITE) has been reduced by 60%, decreasing polluting agents, polluting agents and sulphur contents into waste water and fibers.

It allows to produce a low content of sulphate/sulphides indigo dyeing, reducing drastically the environmental impact and the costs.



Reactor

Nitrogen Indigo Dyeing Pioneers

Reactor O₂ content <1%
Double dip 1.9 m. + 0.5 m.
Dwelling 18 m.

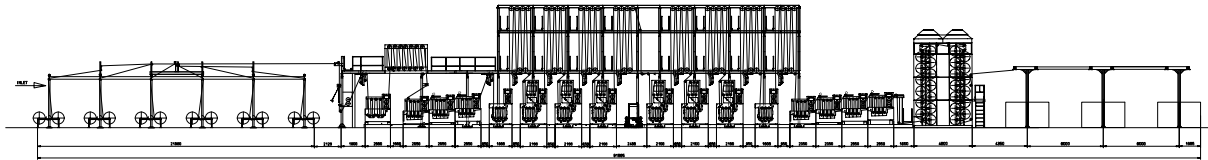
Nitrogen dyed vs. std. dyeing



2.7% Indigo
results after 25 min rinse

- **Sulphate and Sulphides:** drastic reduction on yarns and waste water
- **Fastness improvement:** min 1 point on Dry and ½ on Wet
- **Hydro reduction:** min 30% reduction of hydro and caustic used during the dyeing, up to 60% in case of dyeing only with reactors
- **Sulphur no steamer:** on sulphur dyeing, using Nitrogen Sealed Reactor, no need to use steamer for higher penetration





PROCESS: Scouring at 60°C – Washing Boxes A-B-C – Box n° 1-2 Water – Nitrogen Boxes n° 6-7-8-9 INDIGO – Box n°10 Water
In order to preserve water possibility to over jump box n° 1-2-3-4-5.
Dyeing Indigo using just 6 Nitrogen boxes, reduce HYDROSULPHITE consume up to 60%.



LOOP-SLASHER DYE

Features

- Working speeds from 30 m/min up to 40 m/min
- Continuous fresh dye liquor bath dosing system based on ml/Kg
- 50% less Dyeing bath liquor than other ranges
- Reduced initial investment
- Smaller size up to 35% less than other ranges
- High Sustainability
- Highest Flexibility in Denim World without renouncing to any Denim trend characteristic
- Independent indigo boxes for higher shade flexibility

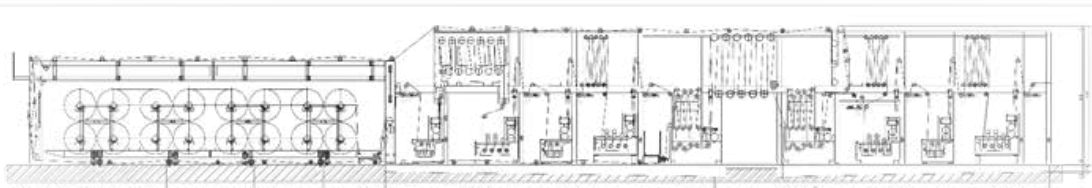
Looptex go back in the past, to be one step forward into the future

We went back to the old LOOP technology, studying it, in order to re-adapt and renewed it, following the market requests and needs, assembling it getting the best parts and performances of all indigo dyeing ranges.

LOOPTEX 2N₂

Supported suitability and peculiar characteristics

- Steamer (bottoming-topping/sulphur color denim)
- High indigo intensities achievable (5-6%)
- Sulphur bottomed indigo casts all colors
- Sulphur topped indigo casts all colors (Independent circuit)
- Sulphur dye all colors (wet-on-dry or wet on wet into N₂ reactor)
- Flexibility (from minimum 2 indigo boxes to 9 with 3 loops)
- High oxidation and fixation rate

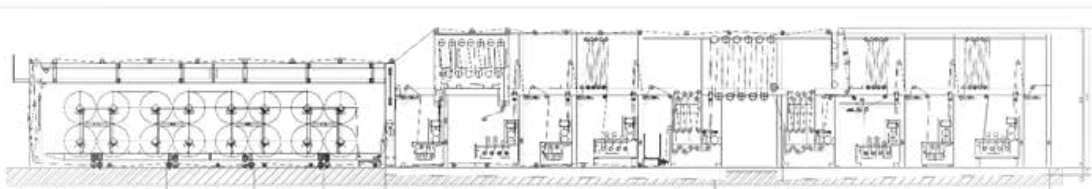


PROCESS: Pre Wetting Box (Indigo Dry on Wet), Wash, Indigo, Skying, 4 Passages in indigo boxes, N₂ Wash, 1 Indigo box independent from main circulation – Neutralizing Wash pH 5.5).

Total dips with 3 loops with different indigo concentration and circulation: 9 indigo deeps

Sulphur dyeing machine setting for dark color denim (Report by Mezzera)

Possibility to use LOOPTEX as a single passage (Slasher mode) without using the Steamer due to the high penetration made by N₂ Atmosphere.



PROCESS: Pre Wetting Box (Scouring), 3 Washes, 2 Sulphur Box Passages in N₂, 2 Washes, 1 Oxiding Box (H₂O₂ + pH 4.5)

Total deeps with 1 loop (Slasher mode): 2 Sulphur dips.

Top performer LOOPTEX (Loop/Slasher)

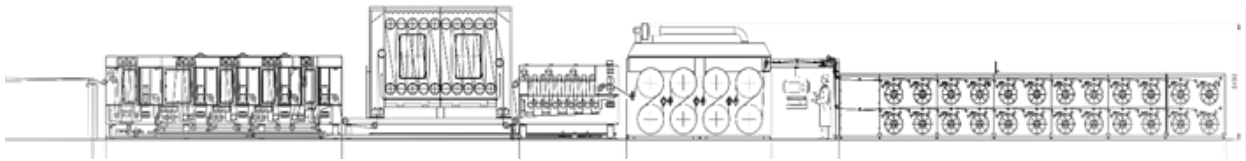
With the top performer of the LOOPTEX equipped with 2 New Generation Nitrogen Reactors and 4 indigo-topping boxes is possible to be more flexible using it as a Slasher mainly, achieving already dark casts (4.5-5%) or process yarns with a Loop technology achieving the darkest cast possible with sheet dyeing machinery (6-6.5%), passing 6 times into reactors and topping with extra 4 indigo boxes.

More over, the extremely high fixation rate achieved by the longer oxidation and airing passage, allows to improve fastnesses and indigo penetrations.

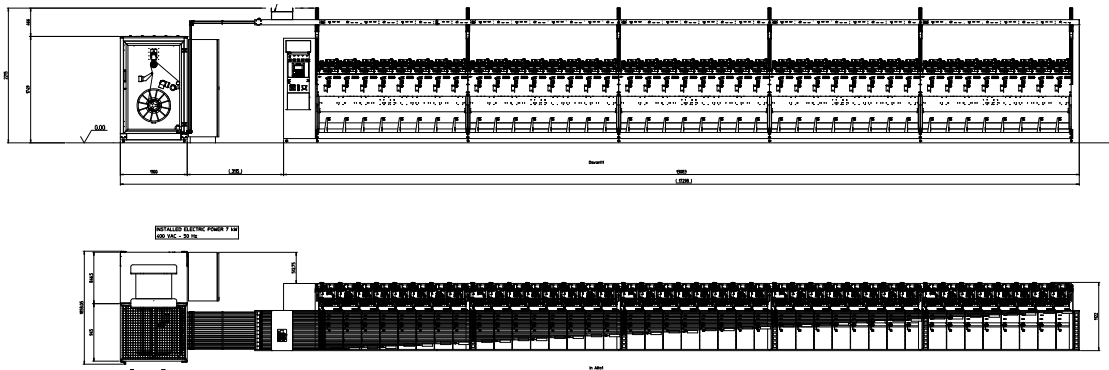


INDICONE MEZZERA VAT DYED YARNS FOR KNITS

The Indigo world is in continue revolution, every year globally are produced more than 2 billions garment, so customers are always requesting new products in order to satisfy their needs. During last years world of denim moved to a more confortable and technical solution, for this reason we developed INDICONE a small Vat Dye Range that gives the possibility to produce Indigo or Sulphur dyed yarns, with typicall look of ring effect denim ready to be unwinded on cones and then used for circular or plain knitting, structured woven and shirting.



PROCESS: Pre Wetting Box (Scouring low Conc), 3 indigo dips in Nitrogen atmosphere, 1 Wash, 1 Oxidation Steamer unit, 1 Wash fixing unit Cylinders Drying unit – 6 or 12 rebeaming unit (40 ends each).

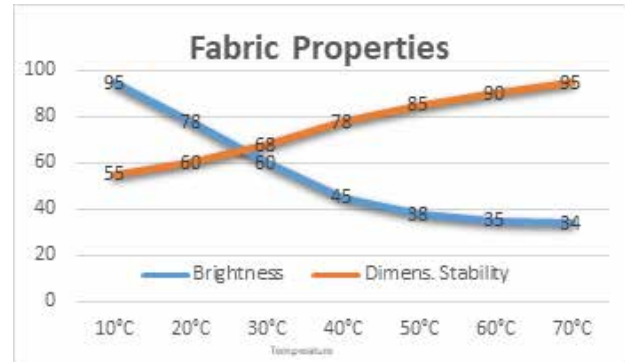
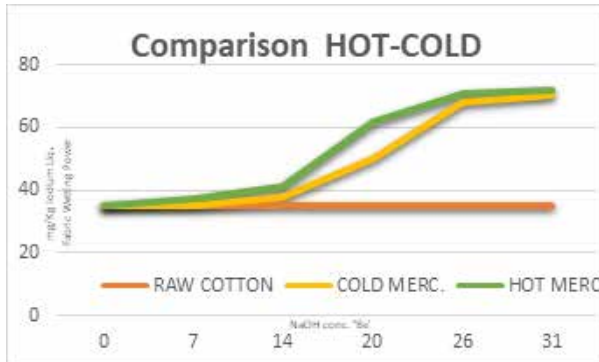




CAUSTIFYING – MERCERIZING DENIM UNITS

Before deciding for a denim finishing unit is important to understand the differences between a mercerization and a caustification ranges.

So as we see from the Graphs here above the increasment of the max Wetting Power we have on cotton is between 23°Be' to 27°Be'. From the other graph we see that Brightness and Dimensional stability have completely opposite behaviour, so usually the working temperature for an already yarn dyed denim is between 25°C to 35°C.

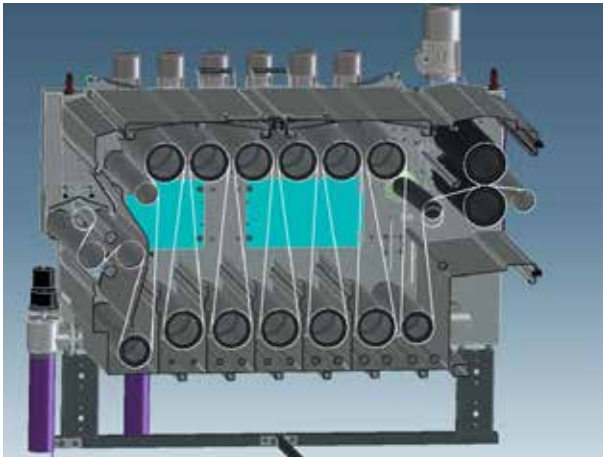


ACTIVA WASHING BOXES

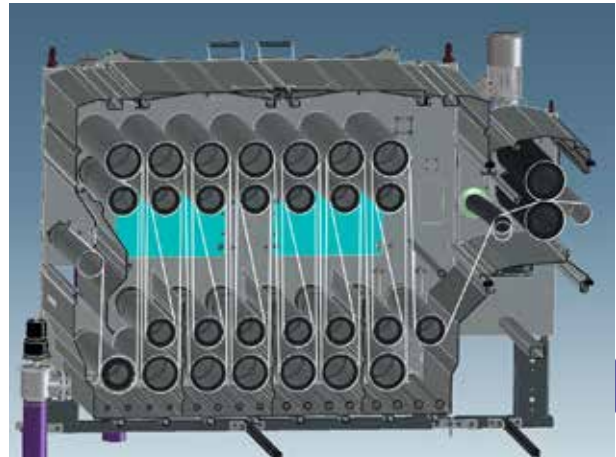
The ACTIVA washing box is suited for all applications which uses the mass exchange by dilution between fabric and liquor as main mechanic washing. ACTIVA boxes forced flows passing through a series of labyrinth baffles.

All Activa washing box feature lower rolls individually driven by motor-gear groups that thanks to inverters and Load Cell installed on the bottom guide roller read the fabric tension value, synchronizing the tensions, avoiding potential creases.

Activa E620



Activa D740

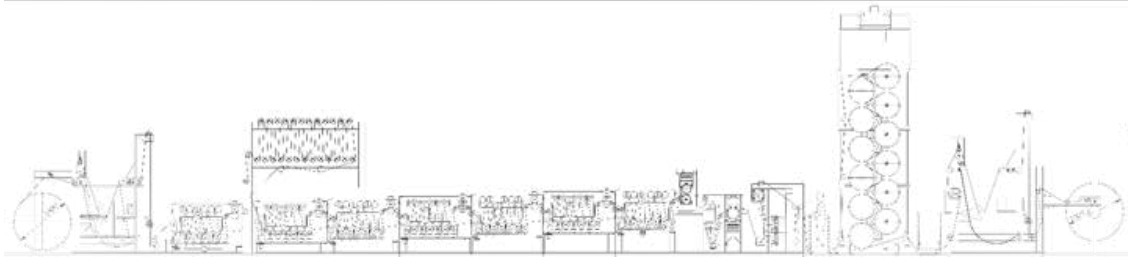


Activa-S double and Activa double thread instead comes with two separate compartments, a double water inlet, and to independent thermoregulation systems in case of more wash power and fabric inlet needs.

DENIM CAUSTIFYING UNIT+SKEW REGULATOR (rigid-low elastane content)

Supported suitability and peculiar characteristics:

- Working speed 35 m/min
- High extracting capability with "activa" boxes
- Caustic self-cleaner filter
- Optional final softening agent box
- Water consumption between 12-20 l/kg
- Working width between 1800mm to 2600mm
- Lower steam consume thanks to the high squeezing final foulard 10 tons
- Skew movement unit and automatic reading unit



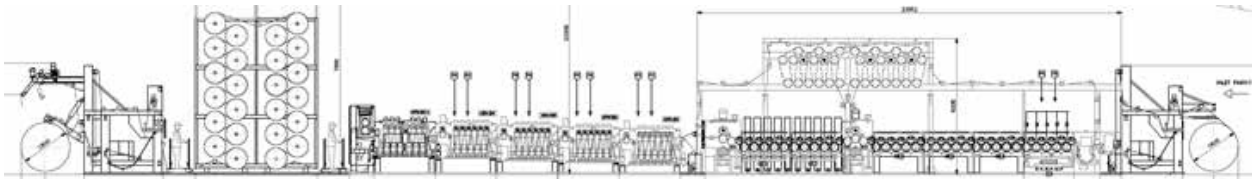
PROCESS: 1°Box NaOH Padding best 23-24°Be' at 25-30°C max, 30m Caustic Reaction Development, 5 Wash Boxes 70°-60°-50°C, 1 Neutralizing pH 4.5 Washing unit, 1 Extra Pressure Foulard 10 Tons. Skew Movement unit regulator. Drying unit. Skew movement reader.



DENIM CAUSTIFYING UNIT (rigid + high elastane content)

Supported suitability and peculiar characteristics:

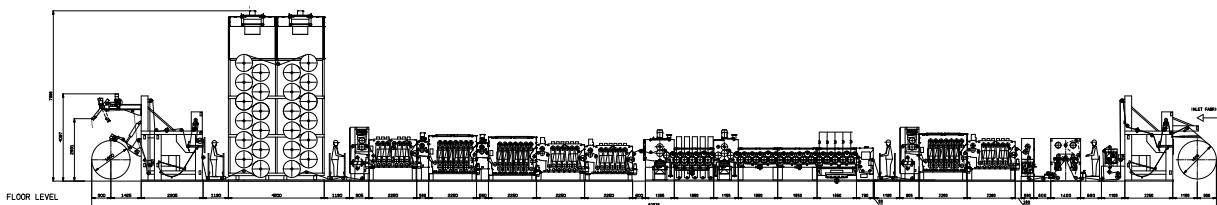
- Working speed 40-50 m/min
- High extracting capability with "Activa" boxes
- Caustic self-cleaner filter
- Padding – reaction unit roll to roll (avoiding selvage twisting)
- Water consumption between 12-20 l/kg
- Working width between 1800 mm to 2600 mm
- Duelling length 30 m
- Stabilisation length 15 m



DENIM DESIZING AND CAUSTIFYING UNIT (rigid + high elastane content)

Supported suitability and peculiar characteristics:

- Working speed 50 m/min
- Singeing front/back
- High extracting capability with "activa" boxes and Activa double thread
- Caustic self-cleaner filter
- Padding – reaction unit roll to roll (avoiding selvage twisting)
- Water consumption between 12-20 l/kg
- Working width between 1800mm to 2600mm
- Steamer 80m fabric content
- Desizing padding box
- Caustifying Wet on Wet





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