

KARL MAYER

WE CARE ABOUT YOUR FUTURE

GREENDYE – Sustainable Denim

Textile Machinery Webtalk (VDMA) 24.09.2020

KARL MAYER – the innovative market leader

KARL MAYER – at a glance

World market leader in the fields of Warp Knitting, Technical Textiles, Warp Preparation, Flat Knitting and Digital Solutions

- Our industry: textile machine building
- More than 3,300 employees worldwide
- Locations in Germany (headquarters), England, Hong Kong, India, Italy, Japan, Switzerland, USA, China, Bangladesh
- Worldwide agencies in more than 90 countries
- German family-owned company, founded in 1937



KARL MAYER Group

Always focused on our customers' requirements



The organization of our Group in Business Units ensures complete focus on customer requirements.

Our worldwide presence guarantees customer closeness and understanding of regional market needs.

WARP KNITTING



TECHNICAL TEXTILES



WARP PREPARATION



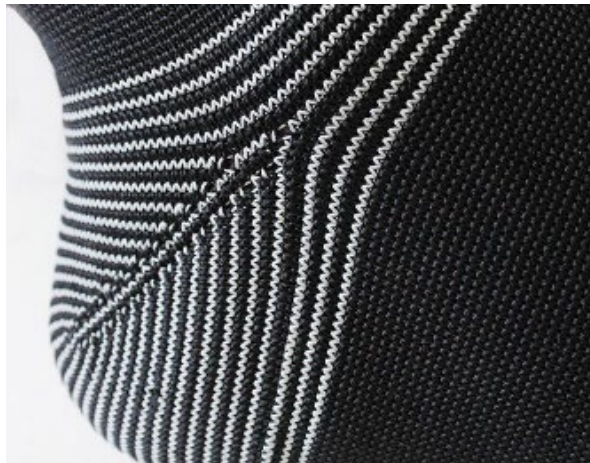
STOLL



KM.ON



Our customers' world Applications



Our product portfolio

WARP KNITTING



Tricot machines
Raschel machines
Double-needle bar machines
Lace machines
Direct warping machines

TECHNICAL TEXTILES



Weft-insertion knitting machines
Composite machines

WARP PREPARATION



Beaming machines and direct warpers
Sectional warpers
Warp sampling machines
Sizing machines
Assembling machines
Denim dyeing units
Creels

STOLL



knitelligence®
ADF
Performer
Knit&Wear

KM.ON



k.ey
k.management
k.production
k.maintenance
k.service
k.partner
k.innovation
k.quality

Locations – worldwide presence



Sustainable Denim



COMPETENCE IN INDIGO DYEING

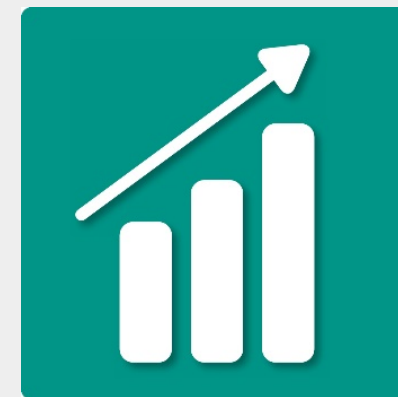
Our goals



SUSTAINABILITY



CHEMICAL & WASTE
REDUCTION



HIGH
EFFICIENCY



The indigo circulation system with high flow rate and low speed combined with the closed design of dyeing vats allow savings of up to 20% of hydro and caustic soda



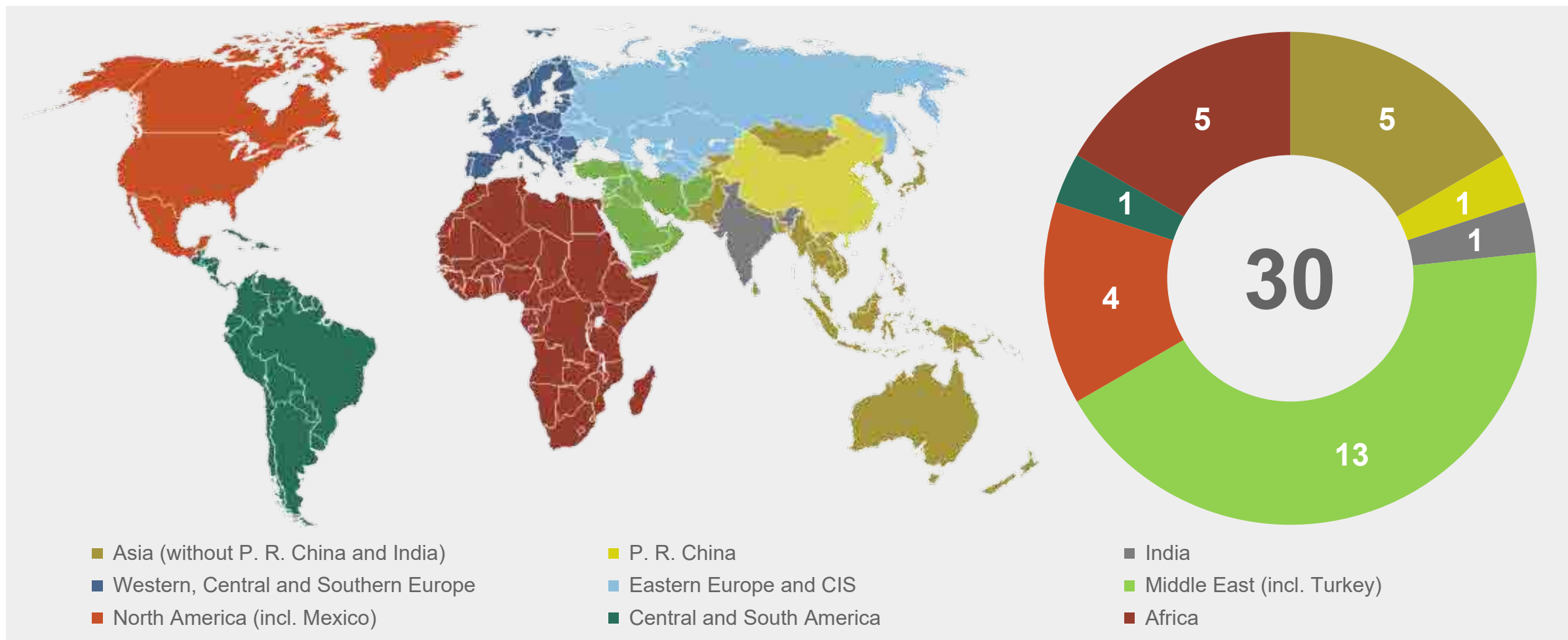
The design of the dyeing vat (type DV) allows you to attain a darker indigo shade with only nine boxes. Due to the shorter dye section, the total volume of the dye bath is drastically reduced



Best washing performance by counter flow and saving water with special cascade design system.

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Indigo dyeing ranges sold by region since 2012 (PRODYE-S and PRODYE-R)





SUSTAINABLE



WARP PREPARATION

GREENDYE



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Indigo dyeing in nitrogen atmosphere



WATER SAVING



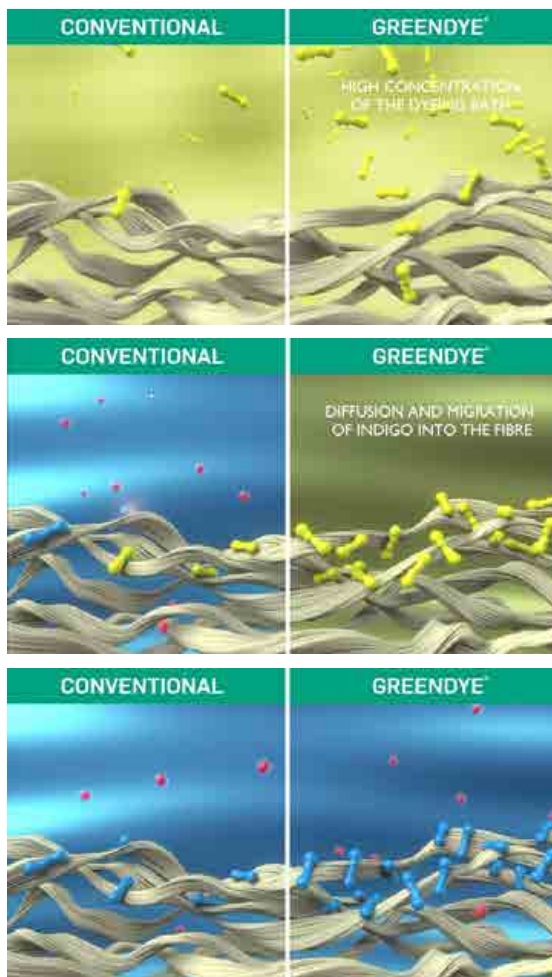
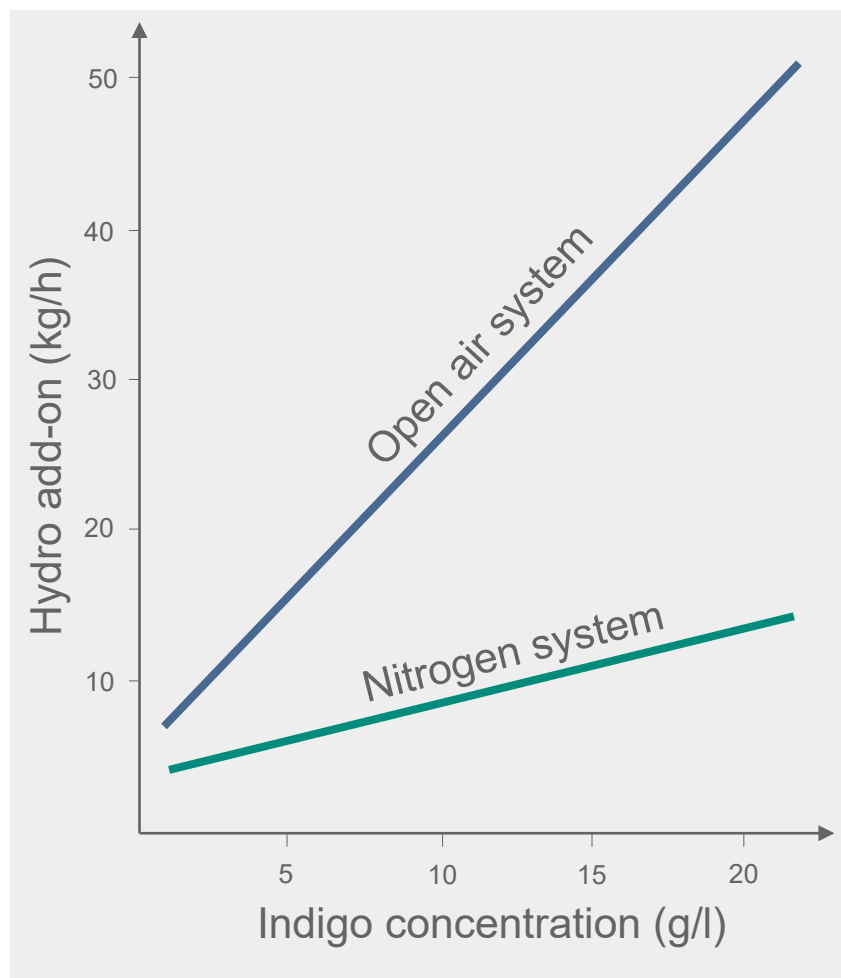
CHEMICAL & WASTE
REDUCTION



HIGH DYEING
EFFICIENCY

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Advantages of nitrogen system



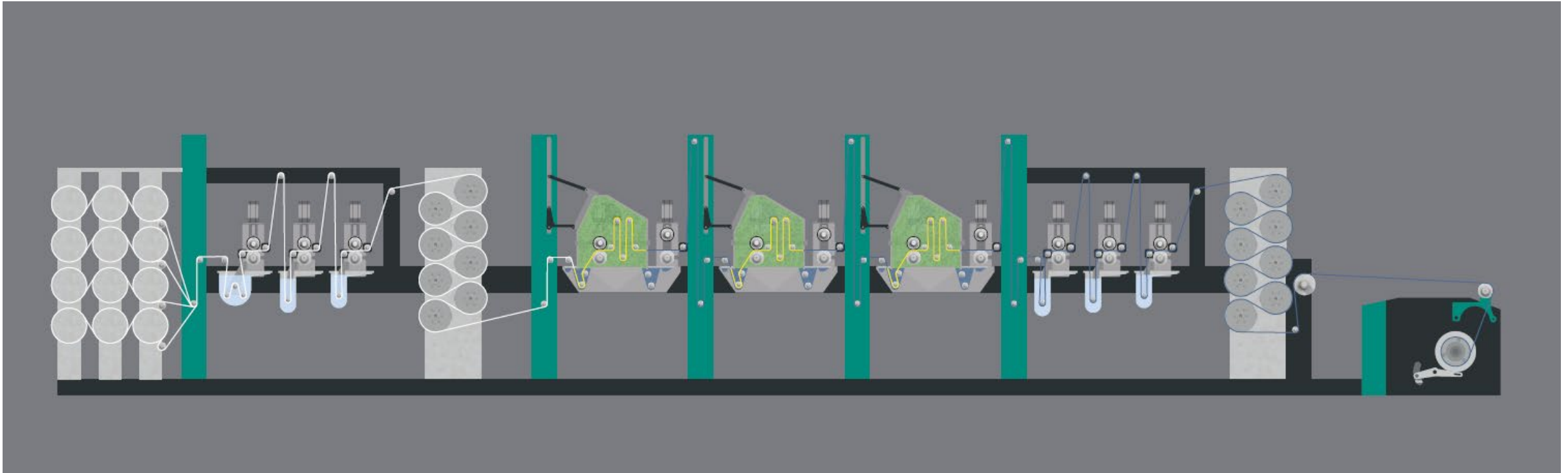
- The nitrogen technology increases up to 3 times the pick-up of a conventional dye vat thanks to the longer dwelling time and the increase of the indigo concentration.
- Easier to maintain reduced indigo stable with low consumption of hydrosulphite and caustic soda even at high concentrations.
- Since the indigo is more penetrated and fixated to the yarn, there is also a reduction of washing water consumption.



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Pilot laboratory machine



The pilot machine is approx. 13 meters long and will exactly reproduce on a scale 1:10 the industrial process by producing samples 200 mm wide

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Indigo dyeing in nitrogen atmosphere



High dyeing efficiency

The nitrogen technology increases 3 times the pick-up of a dye vat. This drastically reduce the length and the number of vats of the machine



Chemical and yarn waste reduction

More than 50% saving in the consumption of hydrosulphite and caustic soda and reduction of yarn waste because of the low number of dyeing vats



Water saving

Since the indigo is more fixated to the yarn, there is also a reduction of water consumption



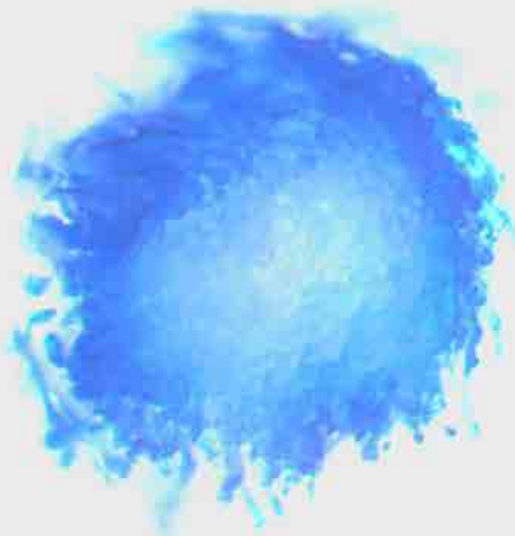
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Differences with the conventional dyeing system

The nitrogen technology gives a different shade compared to the traditional dyeing system. Especially after the finishing of the fabric, because of the higher solidity and penetration of the dyestuff

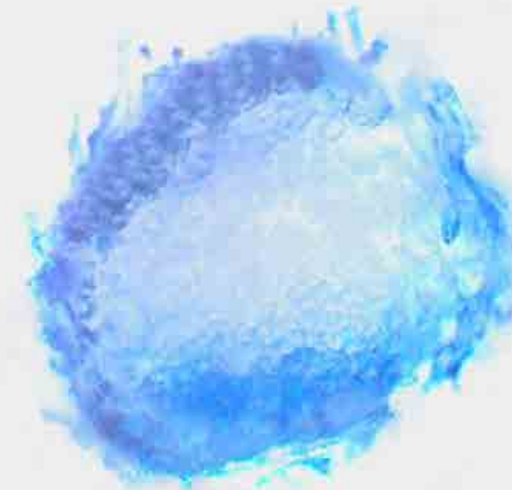
WITH NITROGEN

Cotton Ne 6 Ring – 3 g/l indigo – 3 vats with nitrogen



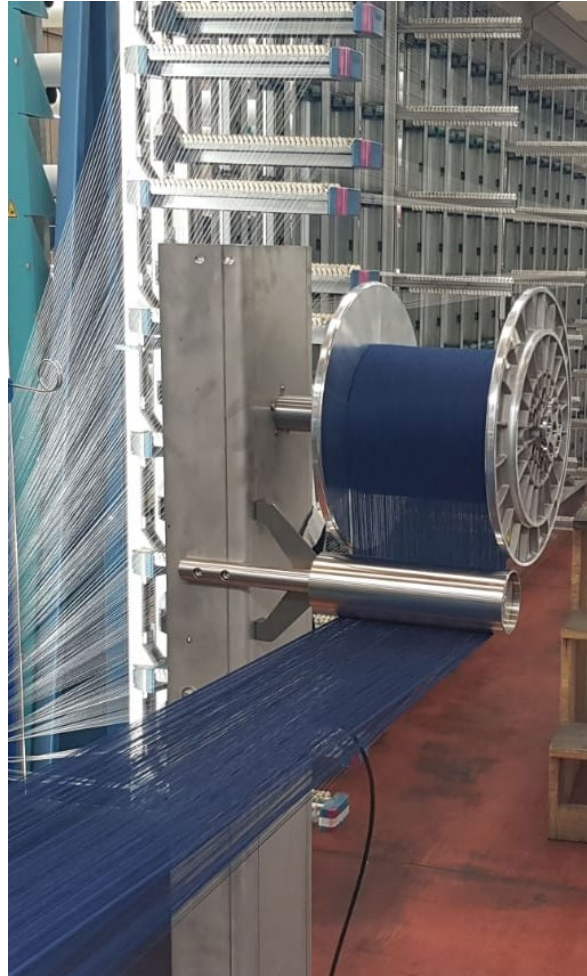
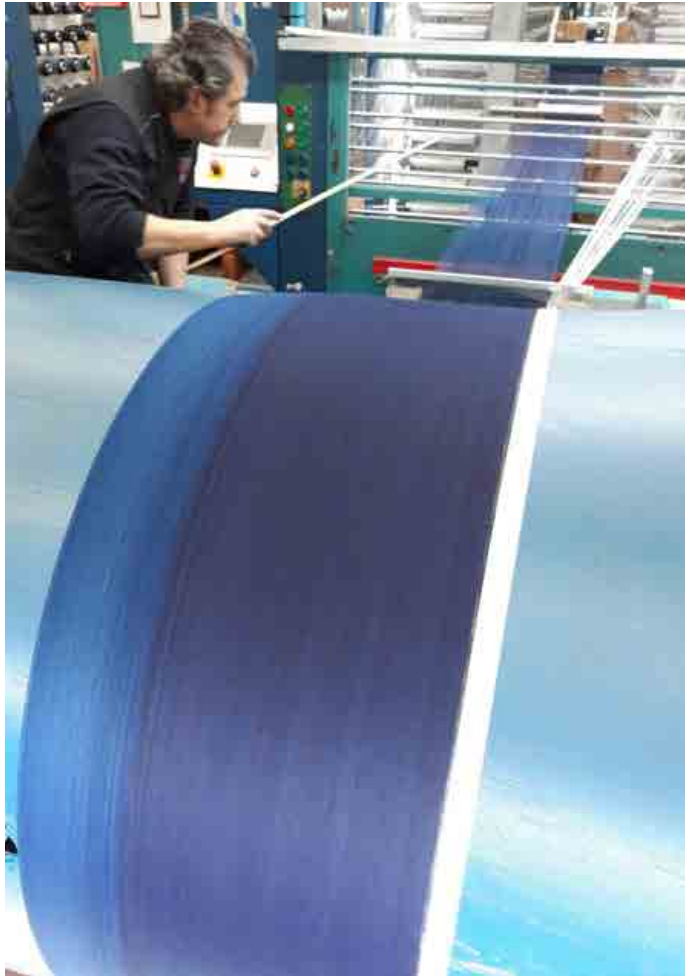
WITHOUT NITROGEN

Cotton Ne 6 Ring – 3 g/l indigo – 3 vats open air



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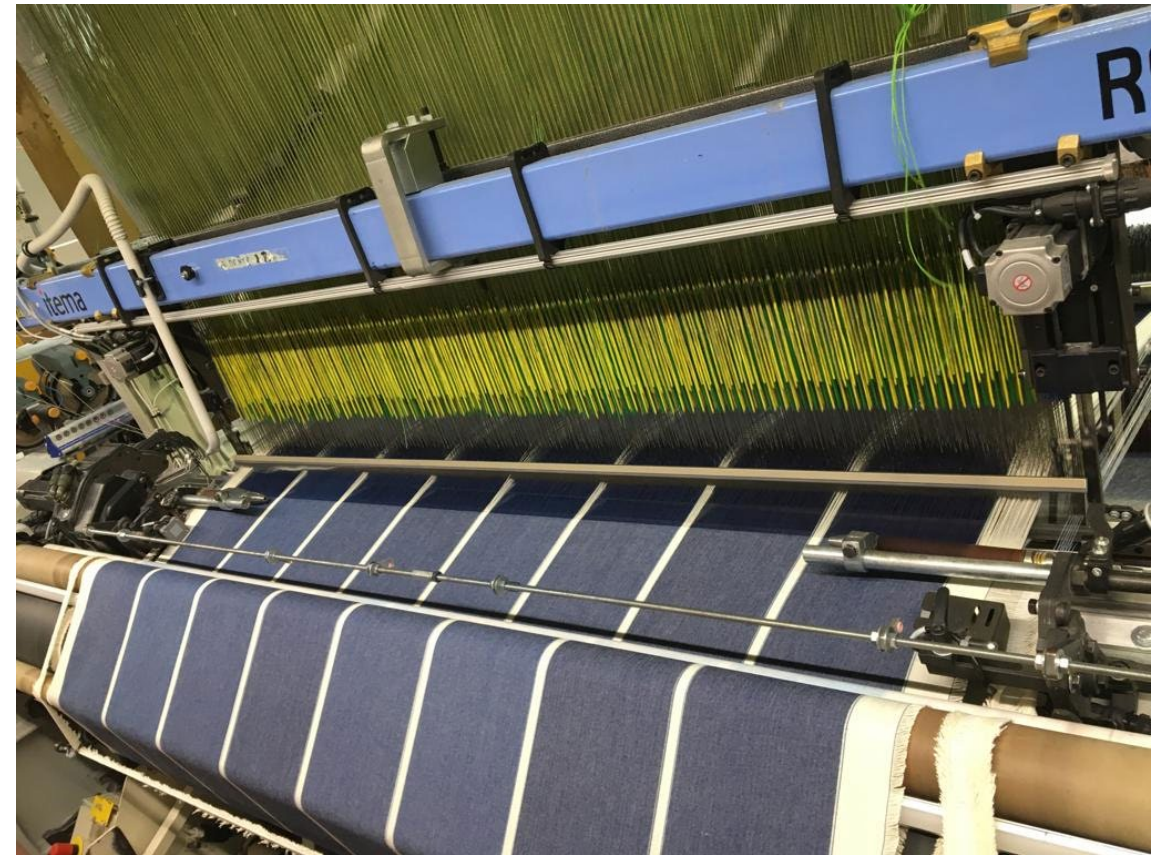
Samples production - warping



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Samples production - weaving

Only with samples produced under realistic fix running parameters it is possible to meet the market requirement with the nitrogen technology



Denim

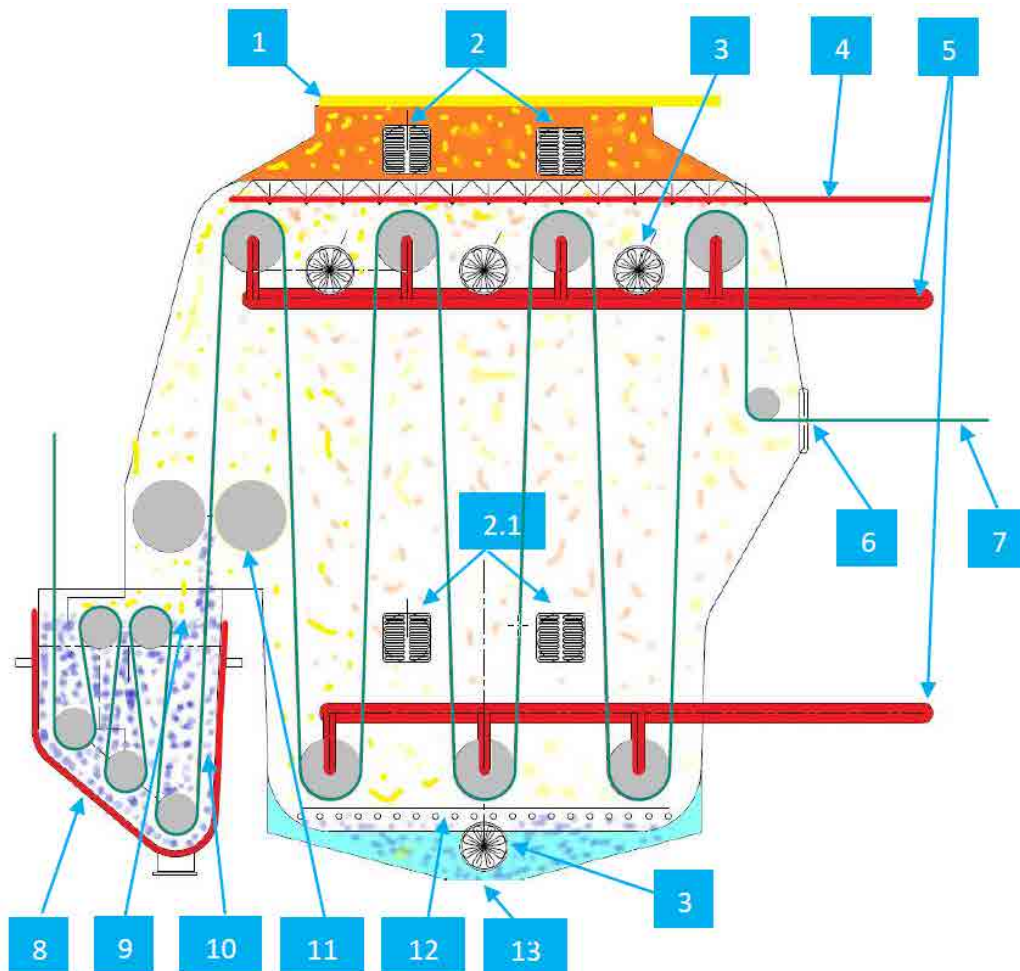
Showroom of samples



GREENDYE NOX



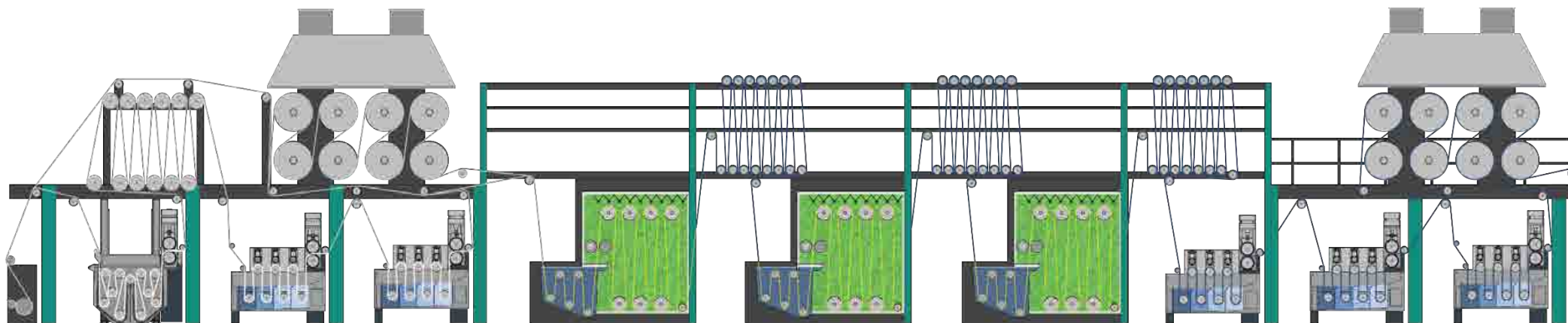
GREENDYE NOX



- 1 - nitrogen supply
- 2 - Extract air ducts 2
- 2.1 - Air intake and circulation
- 3 - Circulation and air intake
- 4 - Pipe system and anti-condensation
- 5 - Cylinder heating
- 6 - anti-friction system with self-cleaning for yarn output
- 7 - Yarn output
- 8 - Heated shirt tank
- 9 - Seal chamber for bath indigo
- 10 - Indigo bath
- 11 - Squeezing cylinders
- 12 - Refrigerated panel for condensate drain
- 13 - Sealed controlled discharge of water for excess of condensate

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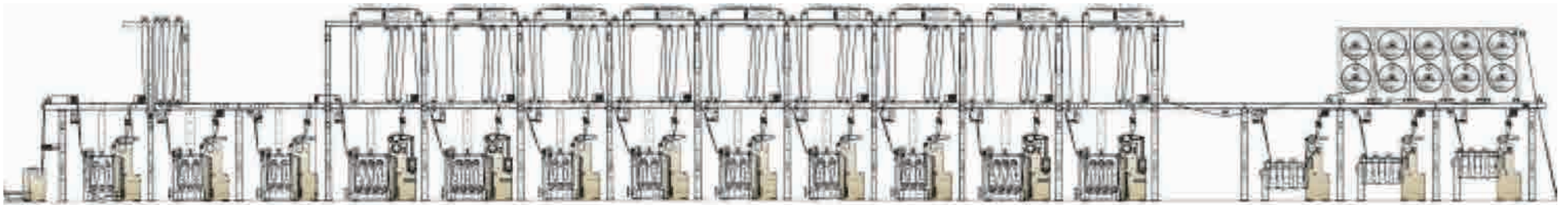
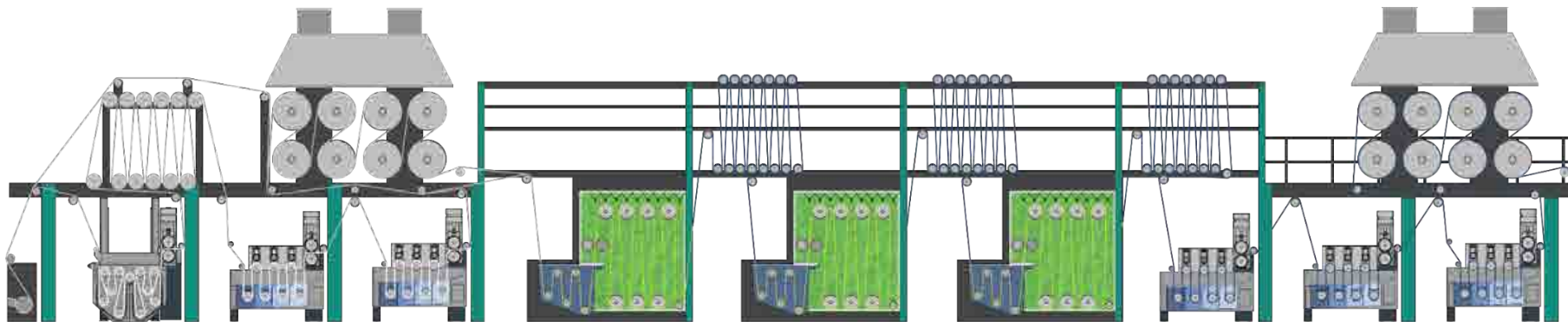
Industrial machine with 3 NOX reactors comparable with the pilot machine



INDIGO	SCOURING	WASH	WASH	NOX	NOX	NOX	WASH	WASH	WASH
MERC. INDIGO	CAUSTIC	WASH	WASH	NOX	NOX	NOX	WASH	WASH	WASH
BOT / INDIGO	BOTTOM.	WASH	WASH	NOX	NOX	NOX	WASH	NEUTR.	WASH
NOX-BOT/IND	SCOURING	WASH	WASH	BOTT/NOX	NOX	NOX	WASH	NEUTR.	WASH
TOPPING	SCOURING	WASH	WASH	NOX	NOX	TOPP/NOX	WASH	NEUTR.	WASH
BLACK	CAUSTIC	WASH	WASH	NOX B	NOX B	WASH	WASH	NEUTR.	WASH

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Comparison with a traditional 9 vats indigo dyeing range



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Comparison with a traditional 9 vats indigo dyeing range



High dyeing efficiency

GREENDYE – 4% indigo shade at 30 m/min with 3 vats

CONVENTIONAL – 4% indigo shade at 30 m/min with 9 vats



Chemical and yarn waste reduction

GREENDYE – 10 kg/h of hydro and soda, 320 m yarn pass

CONVENTIONAL – 20 kg/h of hydro and soda, 560 m yarn pass



Water saving

GREENDYE – 6 lt/kg of final washing water

CONVENTIONAL – 12 lt/kg of final washing water

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