

# KARL MAYER

WE CARE ABOUT YOUR FUTURE

**Highest Productivity vs. Lowest Process costs**

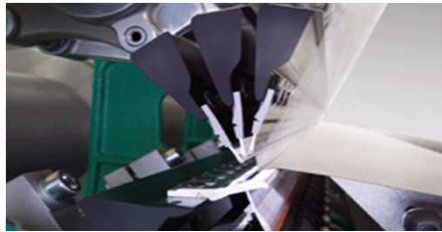
SWISS TEXTILE MACHINERY SEMINAR  
Tehran, 26<sup>th</sup> April 2016

## **Agenda**

- 1 Company Profile**
- 2 Business Unit Warp Preparation**
- 3 Product groups**
  - 3.1 Warping/ Beaming machines**
  - 3.2 Sectional & Warp sampling machines**
  - 3.3 Sizing machines**
  - 3.4 Indigo dyeing machines**

## 1 Company Profile

# KARL MAYER Business Units



Warp Knitting	Technical Textiles	Warp Preparation	Parts and Components
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<p><b>Products:</b></p> <ul style="list-style-type: none"> <li>– Tricot Machines</li> <li>– Raschel Machines</li> <li>– Double-needle bar</li> <li>– Raschel Machines</li> <li>– Lace Machines</li> <li>– Warpers for warp knitting</li> </ul> <p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>– rigid fabrics</li> <li>– elastic fabrics</li> <li>– semitechnical fabrics</li> </ul>	<p><b>Products:</b></p> <ul style="list-style-type: none"> <li>– Multiaxial</li> <li>– Biaxial</li> <li>– Fibre Spreading Lines</li> <li>– Weft Insertion</li> </ul> <p><b>Applications:</b></p> <ul style="list-style-type: none"> <li>– Composites (Glass, Carbon, Hybrids)</li> <li>– Coating Substrates</li> <li>– Geotextiles</li> </ul>	<ul style="list-style-type: none"> <li>– Beaming machines</li> <li>– Sectional warping machines</li> <li>– Warp sampling machines</li> <li>– Sizing machines</li> <li>– Assembling machines</li> <li>– Indigo dyeing range machine</li> <li>– Creels</li> </ul>	<ul style="list-style-type: none"> <li>– Wide range of technologies</li> <li>– Parts manufacturing</li> <li>– CFRP competence</li> </ul>
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## KARL MAYER Group Locations

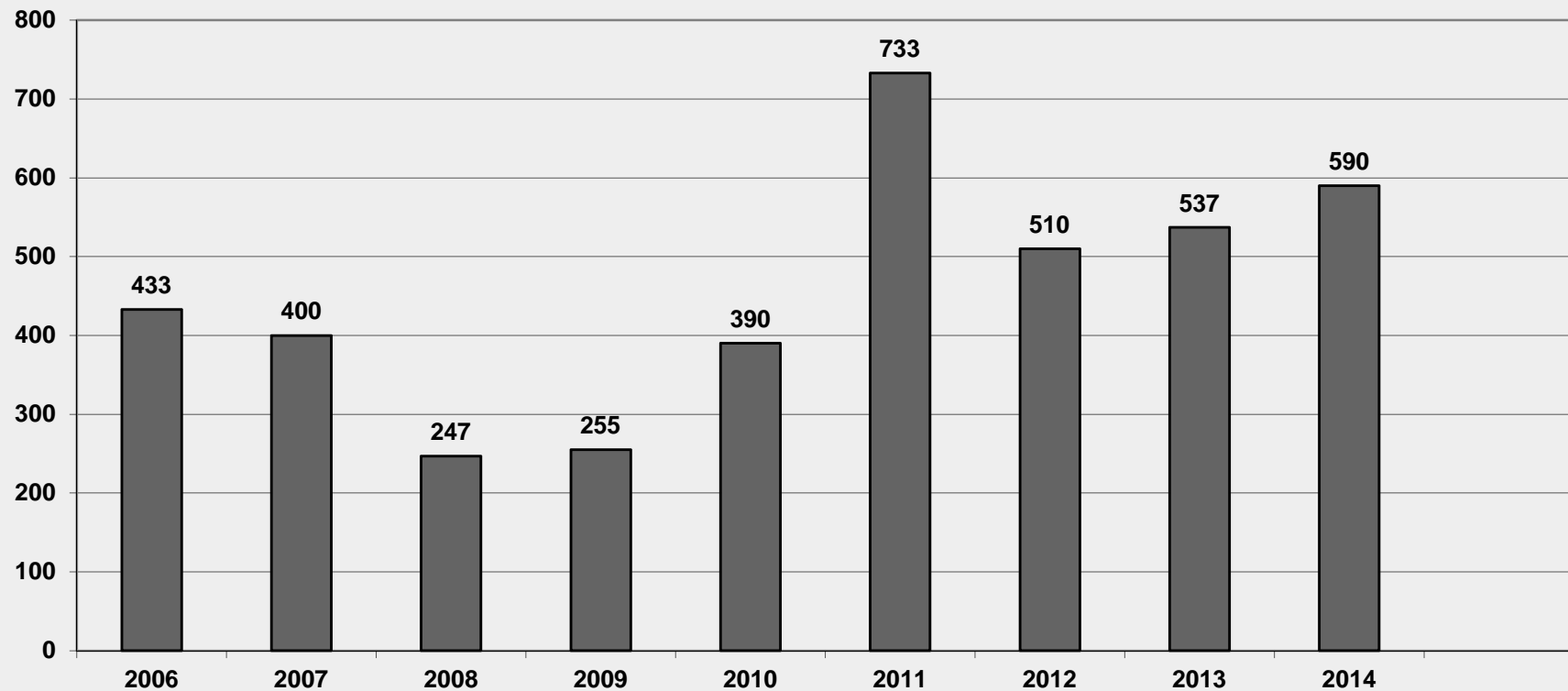


**Europe** Germany Obertshausen, Chemnitz, Naila Italy Mezzolombardo Switzerland Uzwil England Shepshed  
**Asia** China Changzhou City, Hongkong India Mumbai, Ahmedabad Japan Fukui-City  
**North America** USA Greensboro

## KARL MAYER Group

### Development Turnover 2006 - 2014

Turnover KARL MAYER Group (EUR in mio.)



## 2 Business Unit Warp Preparation

## History of KARL MAYER Warp Preparation

1990	Strategic decision based on the experience Warping for Warp Knitting to enter in Warping Preparation Weaving	Warp Preparation
1992	Cooperation with ROTAL for Sizing	Sizing
1994	HERGETH automatic and sample Warper	NOM, GOM, MultiMatic
2007	Integration SUCKER Integration TEXTROL Integration GRIFFIN	Sizing Glass Fibre Denim, Sizing
2008	Integration BENNINGER to enter in the field of commodity	Denim, Creels, Ergotec and Sizing

Best in

today

**KARL MAYER is the brand name of Warp Preparation**

- Innovative solutions for today's and tomorrows' challenges
- Reproducible high quality standards and optimized price-performance-ratio



## 3 Product Groups

# Business Unit Warp Preparation

## Product Groups

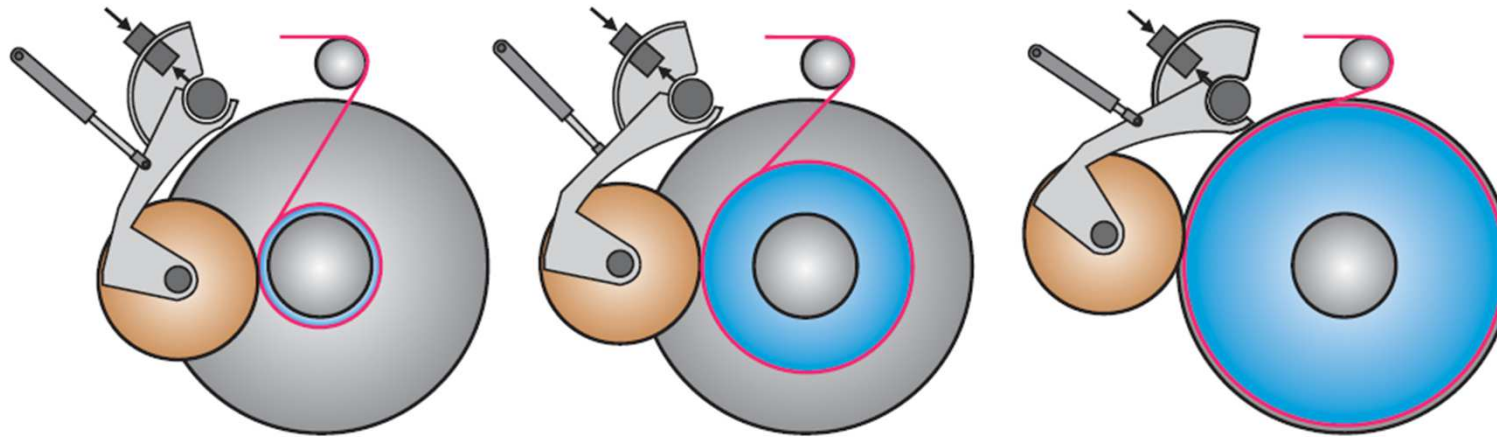
Product Groups					
Warping / Beaming Machines	Sectional Warping Machines	Warp Sampling Machines	Creels	Sizing / Assembling Machines	Indigo Dyeing
 <p>Warpers for spun yarns</p> <ul style="list-style-type: none"> <li>– WARP DIRECT</li> <li>– BALL WARPERS</li> <li>– LONG CHAIN BEAMER</li> </ul> <p>Warpers for filament and glass yarns</p> <ul style="list-style-type: none"> <li>– ZM-F /G</li> <li>– PMC-B paper</li> <li>– BM PP/PE tapes</li> </ul>	 <p>Standard application</p> <ul style="list-style-type: none"> <li>– ERGOTEC</li> <li>– NOV-O-MATIC</li> </ul> <p>Technical Application</p> <ul style="list-style-type: none"> <li>– OPT-O-MATIC</li> </ul>	 <p>GIR-O-MATIC</p> <ul style="list-style-type: none"> <li>– GOM 8</li> <li>– GOM 16-S</li> <li>– GOM 16</li> <li>– GOM 24</li> </ul> <p>MULTIMATIC</p> <ul style="list-style-type: none"> <li>– MM 64</li> <li>– MM 128</li> </ul>	 <p>Creels for spun yarns</p> <ul style="list-style-type: none"> <li>– V-creel</li> <li>– Parallel creel</li> </ul> <p>Creels for filament yarns</p> <ul style="list-style-type: none"> <li>– Parallel creel</li> </ul> <p>Unrolling creels:</p> <ul style="list-style-type: none"> <li>– GAR universal</li> <li>– GAM monofil</li> <li>– GAPP polyprop</li> </ul>	 <p>Sizing machine for spun yarns</p> <ul style="list-style-type: none"> <li>– ISOSIZE®</li> <li>– PROSIZE®</li> </ul> <p>Sizing machine for filament and glass yarns</p> <ul style="list-style-type: none"> <li>– SMR-F /-G</li> </ul> <p>Assembling machine</p> <ul style="list-style-type: none"> <li>– AMR-F /-G</li> </ul>	 <p>INDIG-O-MATIC</p> <ul style="list-style-type: none"> <li>– IOM-S slasher</li> <li>– IOM-R rope</li> </ul>

## 3.1 Warping/ Beaming machines

## Warping/ Beaming Machines



To produce weaver's beams of high quality and precise length measurement.



### Precise length measuring

- The back beams of a batch must all be wound with absolutely the same length. We guarantee a range of under 0.1 %
- When sizing, the batch must be ended as soon as the first back beam is empty.
- Residual lengths on other beams are waste.

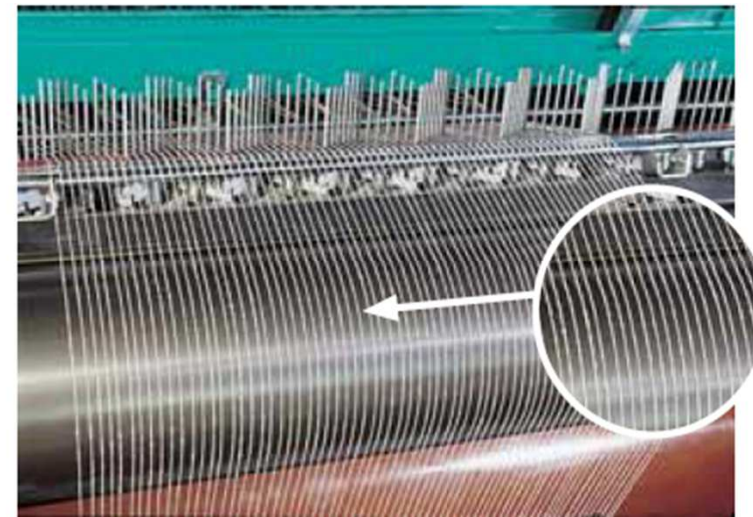
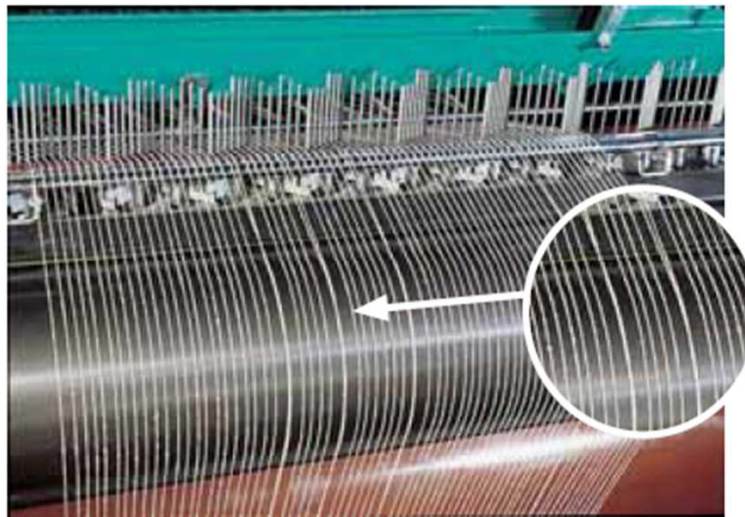
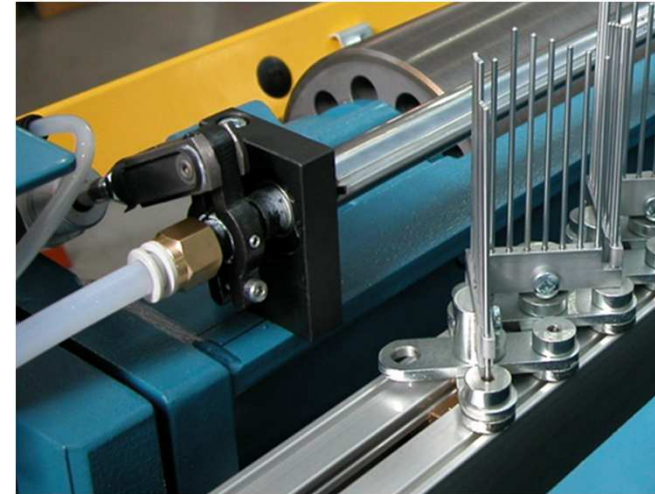
### Indirect pressing with active kick-back

- The pressure roller is electro-hydraulically controlled, and the contact pressure is infinitely variable between 500 and 6000 N.
- A kickback device allows a quick lifting of the pressure roller during machine stop.
- In this way, it is possible to avoid additional friction against the yarn package.



### Yarn uncrossing unit

- The automatic yarn uncrossing unit guarantees the proper yarn arrangement immediately after machine start-up
- The warp uncrossing device is combined with the blowing device for the comb
- The end sheet between the comb and the guide roller is lifted up momentarily
- Through the lift-up cross ends will be avoided hence no warp end entanglement during sizing



- The V Creel is the optimal creel for the Direct Warper
- Free yarn running between the yarn brake and comb.
- Low yarn tension.
- Higher winding speed (up to 1200 m/min).
- High productivity



- It ensures high production speed as well as rapid batch changes



- The universal stop tensioner
- **OPTOSTOP** has been specially developed for the direct warping of staple fiber yarns at high speed for all count range
- (5/1 Ne -120/1 Ne)
- With integrated Opto-electronic stop motion

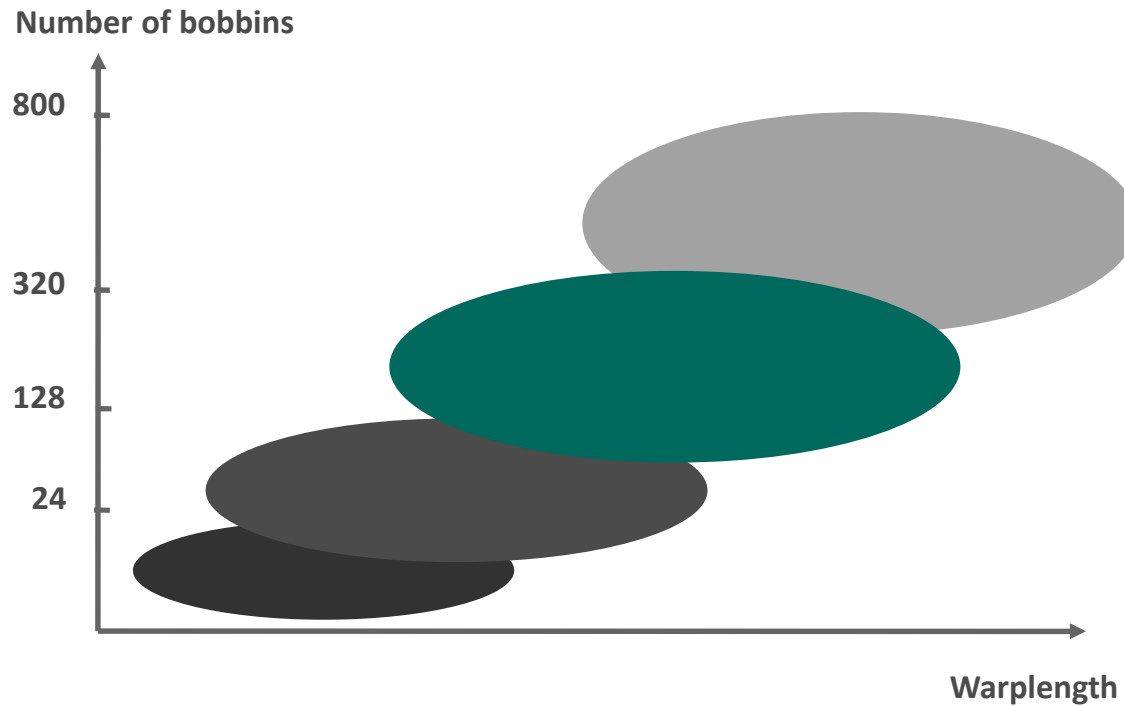
- Touch free monitoring of the ends
- Indication of running ends
- Short reaction time
- No adjustment is necessary
- Gently braking of the thread, thanks to special brake plates





## 3.2 Sectional & Warp sampling machines

## Perfect solutions for all production fields



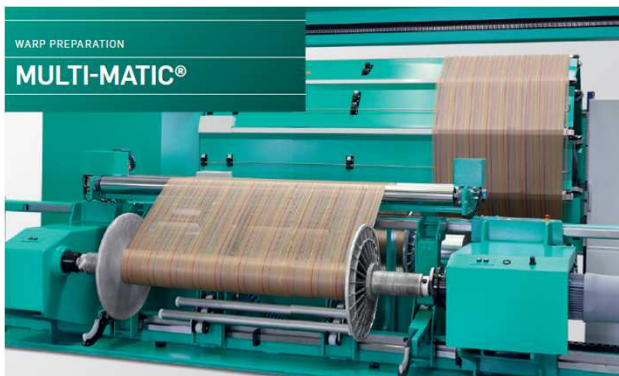
**ERGOTEC / Opt-O-Matic**  
High-performance sectional warping machine

**Nov-O-Matic**  
Automatic sectional warping machine

**MULTI-MATIC®**  
Automatic short warp-sampling machine

**Gir-O-Matic**  
Automatic warp-sampling machine

## Automation for highest productivity and reproducibility



## 3.3 Sizing machines

## KARL MAYER Sizing machines



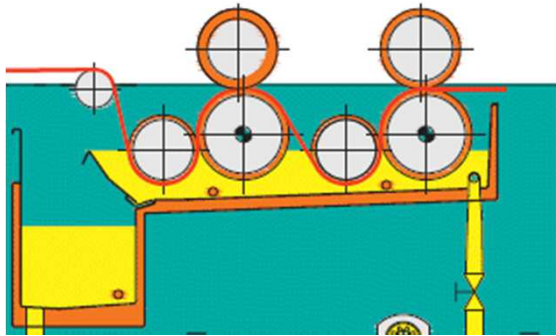
### Spun yarn

#### ISOSIZE

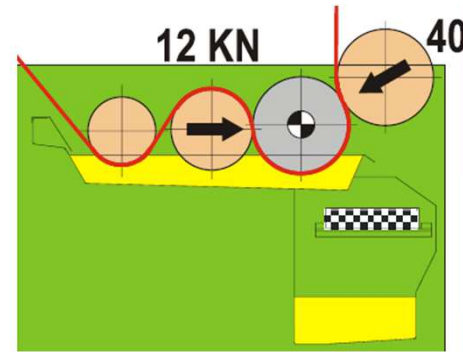
Former SMR-SP sizing machine with size boxes CSB and CSB-PW

#### PROSIZE®

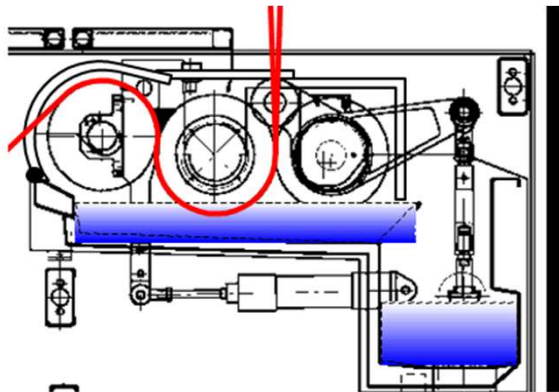
New sizing machine with size boxes type HSB an VSB



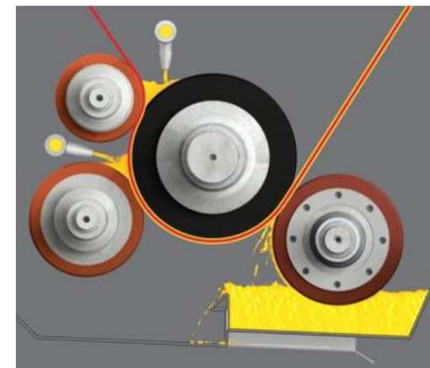
**Traditional system**  
 Double dip and double squeezing system with 6 rollers.  
 Example: TKD and SD-C



**Linear system**  
 Double dip and double squeezing system with 4 rollers in linear design.  
 Example: CSB



**Sucker system**  
 One application point with spray bar and one dip.  
 Example: NS and EVE



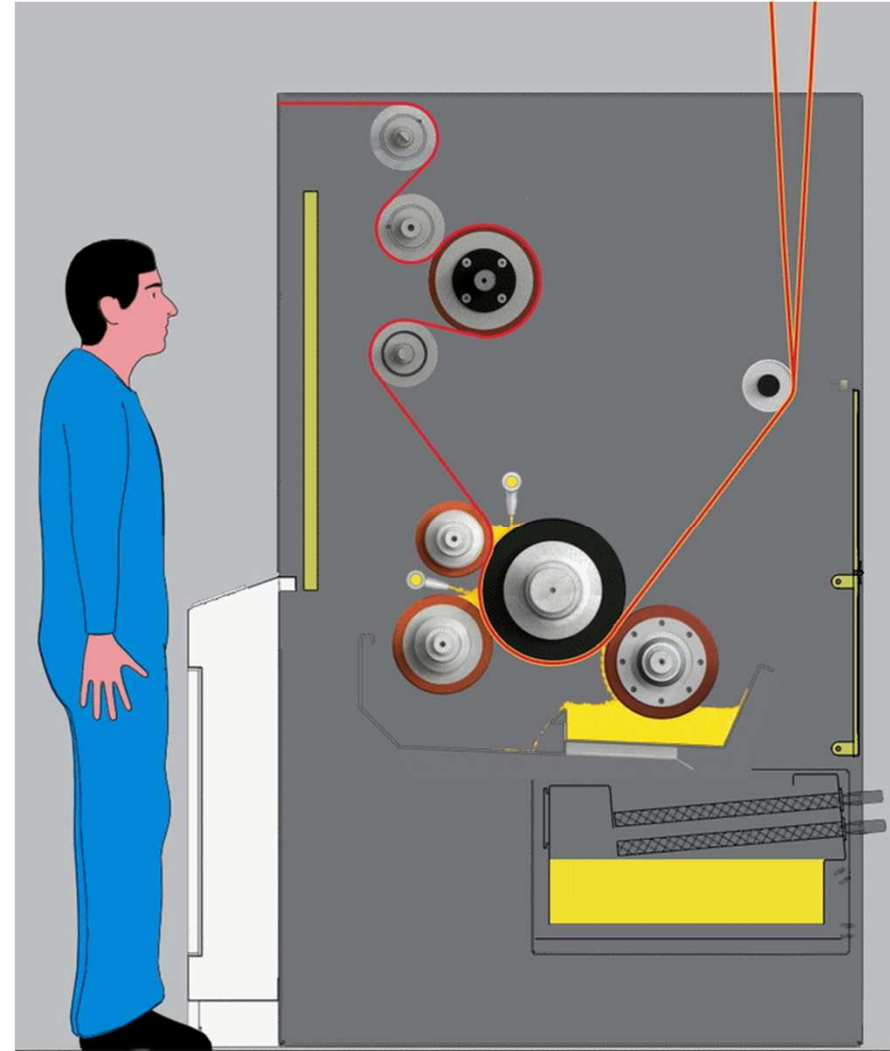
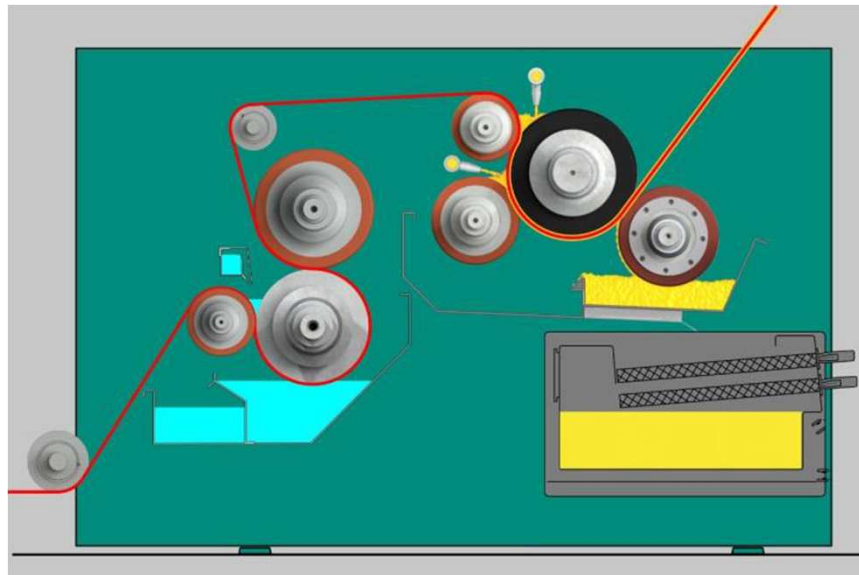
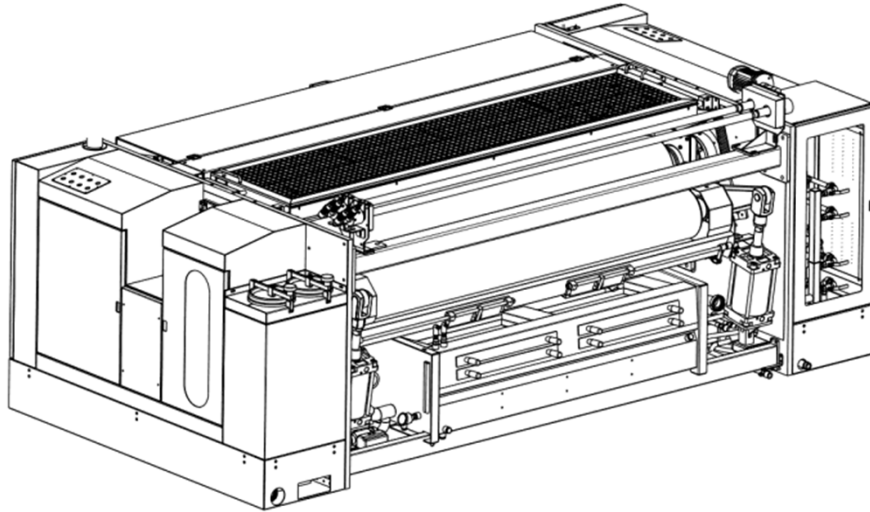
**PROSIZE**  
 Two application points with spray bar and one final application roller.  
 Example: HSB

ProSize®



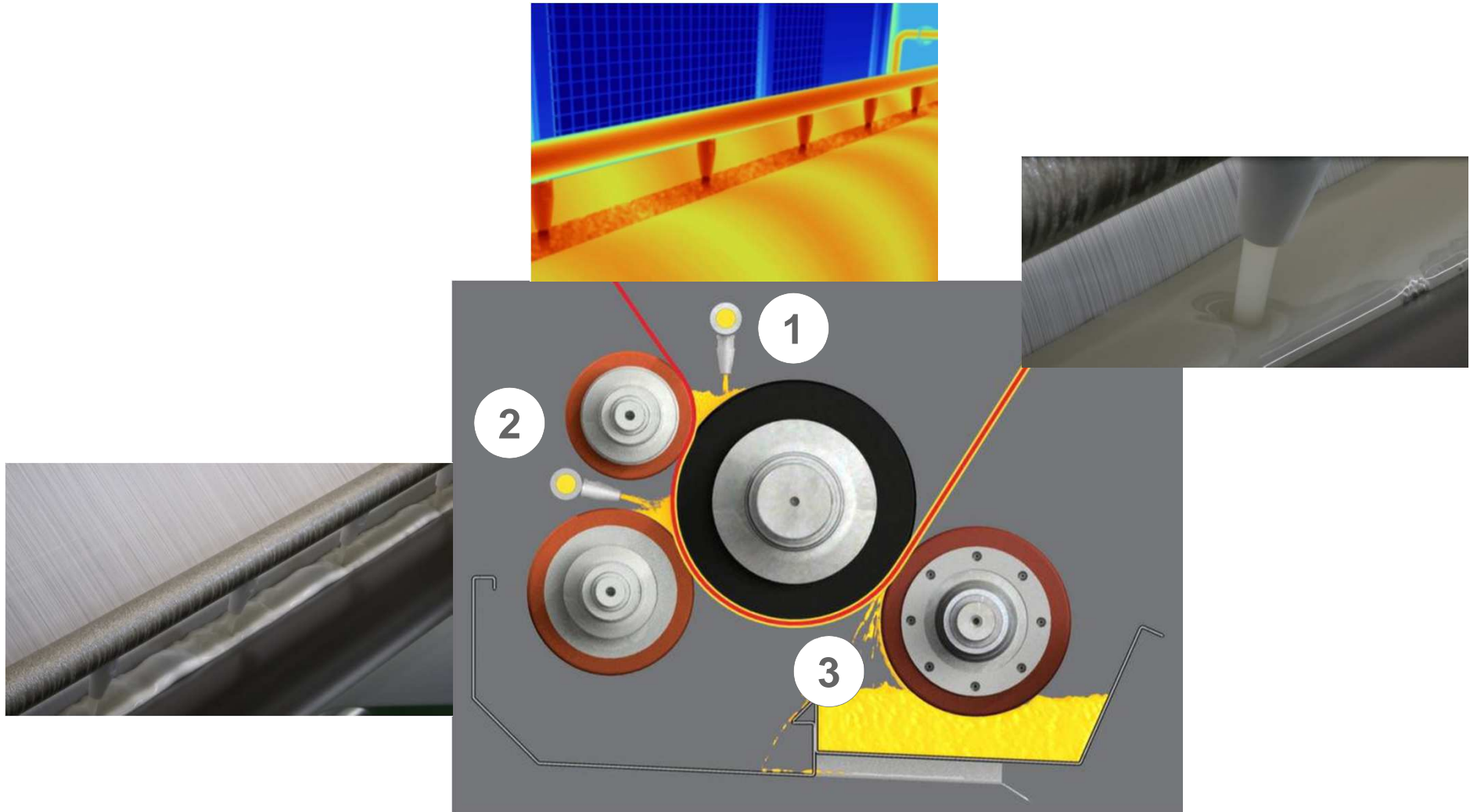


## ProSize® Size boxes

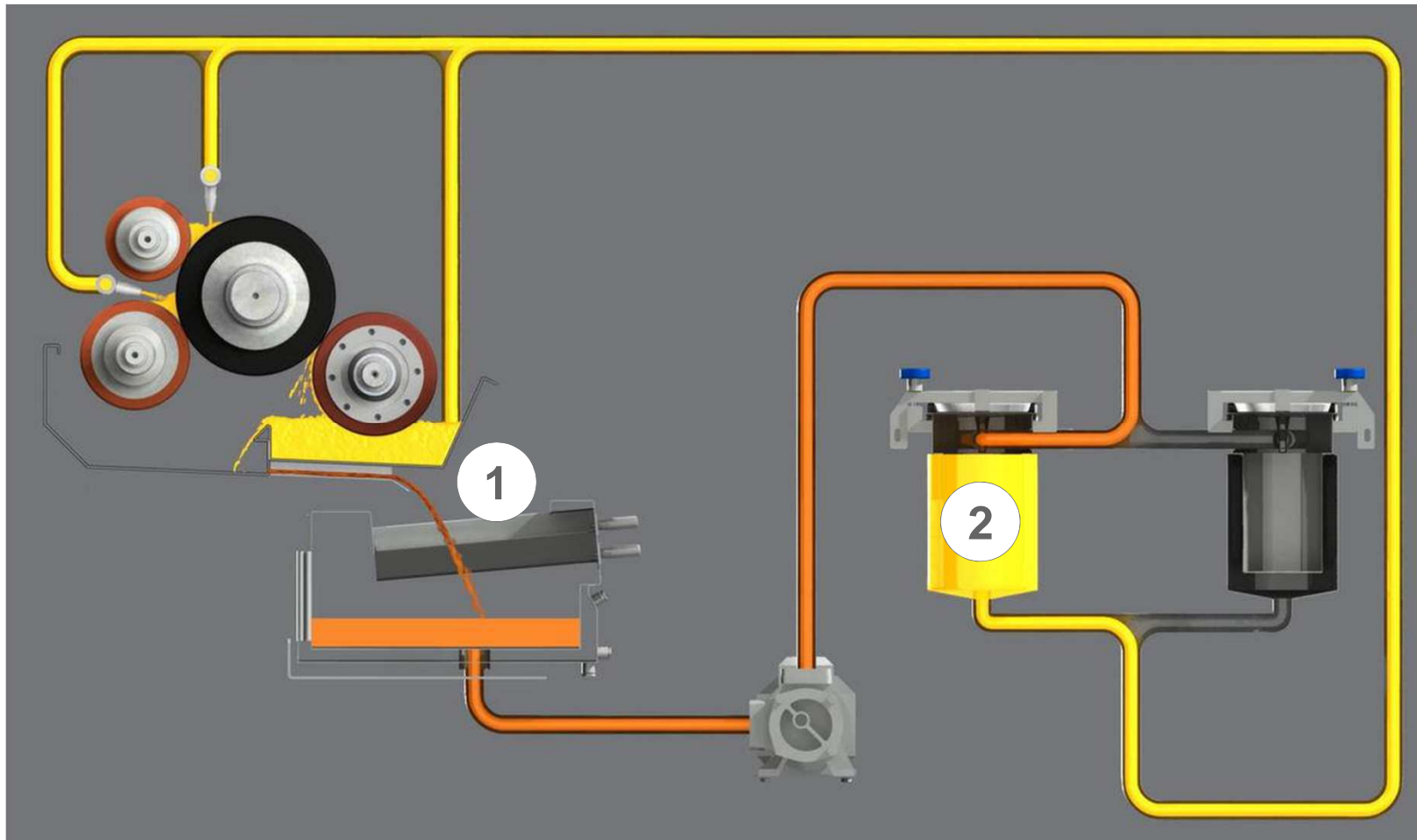




## ProSize® Sizing process



## ProSize® Filter system



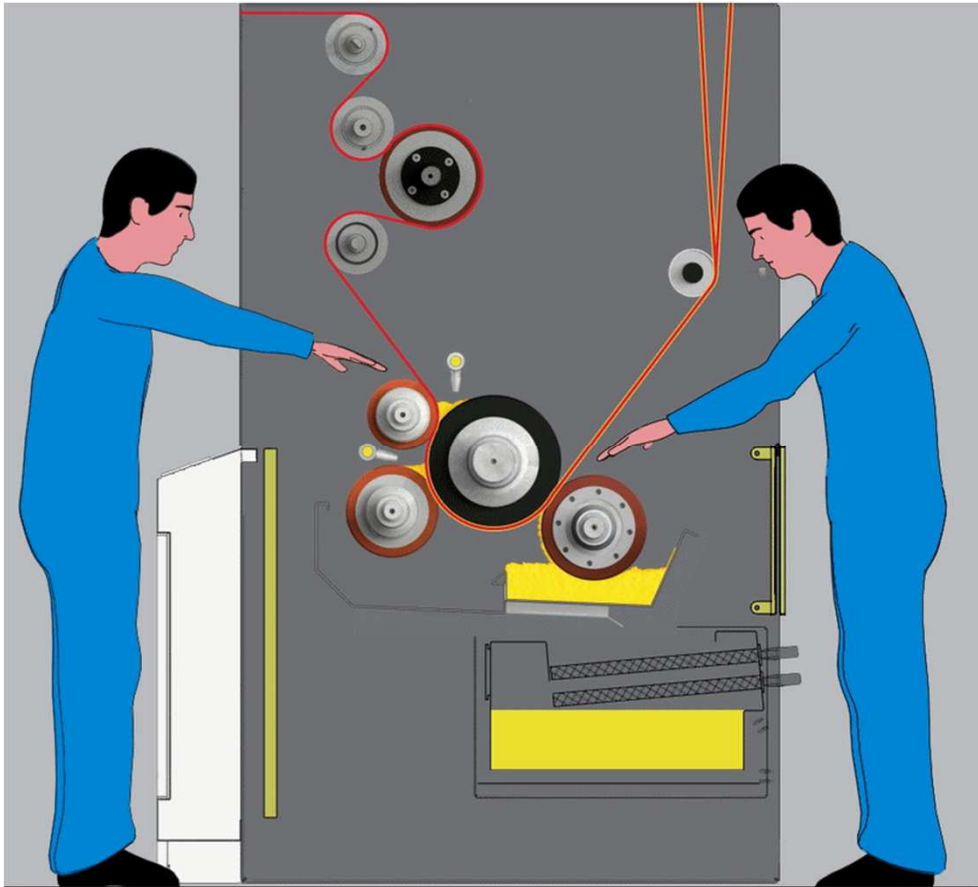
## ProSize® Guarantees highest productivity in weaving

1. Double filter  
in the reserve vat

2. By-pass filter



## ProSize® Perfect handling



## 3.4 Indigo dyeing machines



## ProDye

The perfect solution with best technology for indigo dyeing



## ProDye

### What is it

ProDye is a combination of technologies developed over the last three years by Karl Mayer achieving the following performances in the dyeing process:

- Darker indigo shade
- Reduction in water consumption and waste yarn
- Double productivity in case of lightweight denim



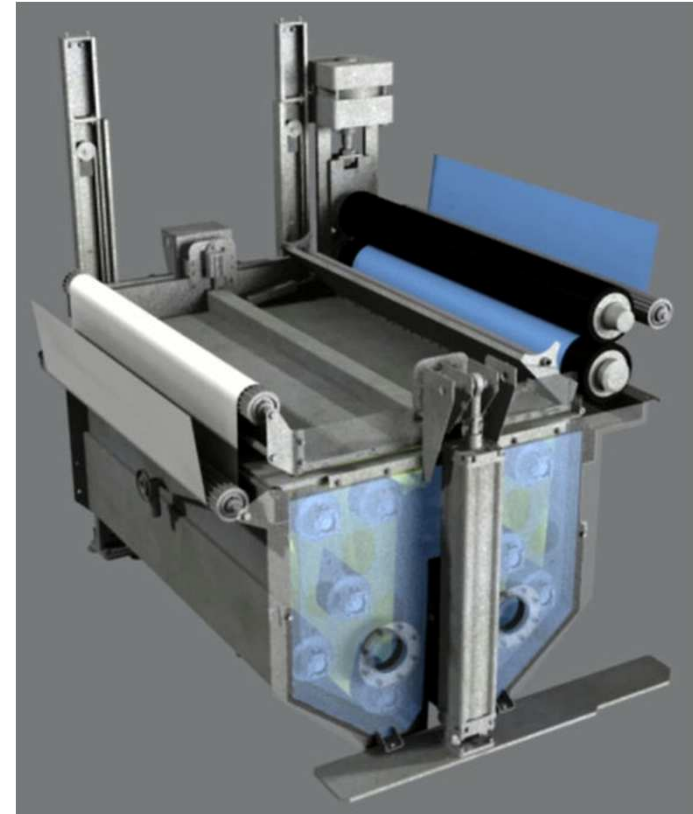
**ProDye 1800 mm working width**  
Side view

## ProDye

### Double Vario

The heart of the ProDye is our dyeing unit Double Vario developed with the best technologies to reach the top performances in indigo dyeing

- Longest dwelling in slasher technology
- Integrated rollers lifting device, easier yarn repairing, better cleaning and maintenance, less time preparation
- Perfect bath circulation by cross flow system for uniform dyeing result



**Double Vario**  
Inside view

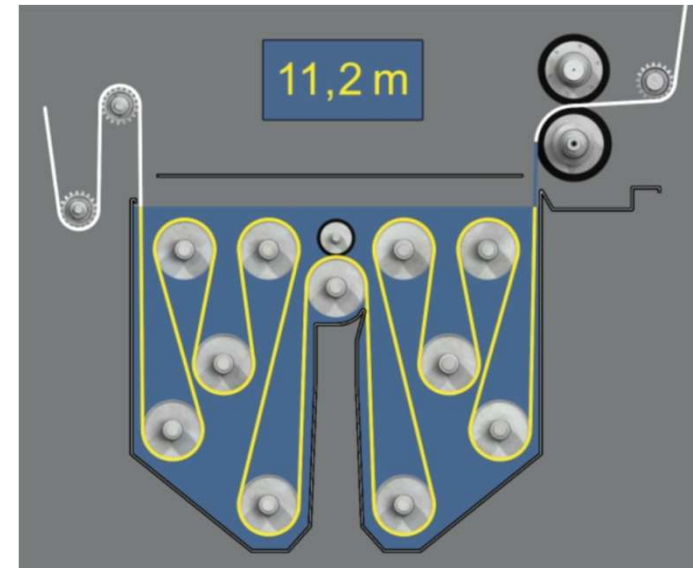


## Double Vario 11,2 m dwelling time

The yarn pass length can reach 11,2 m with good vertical movement of the dyeing bath.

With the Double Vario it is possible to reach darker shade of indigo with less vats. The machine is more compact.

**Longest dwelling time available in the market  
for a single dye vat**



**Double Vario**  
11,2 m dwelling time

## Double Vario

### Practical example of dark denim

Number of Double Vario vat	: 8
Yarn count	: Ne 10 ring
Number of ends	: 4850
Oxidation length	: 35 m
Production speed	: 25 m/min
Indigo concentration	: 3 g/l
Indigo coverage on the yarn	: 5,5%



#### Sample

Ne 10 ring with 5,5% indigo

**Only with the Prodye it is possible to reach  
this darkness just with 8 vats**

## Double Vario Integrated roller lifting device

All the rollers can be lifted from the dyeing vat with pneumatic system.

- Facilitate the repair of a broken end without emptying the vat. Therefore the dyeing bath remain it the correct conditions
- It is much easier to clean the vat and therefore less time is needed during the preparation process.

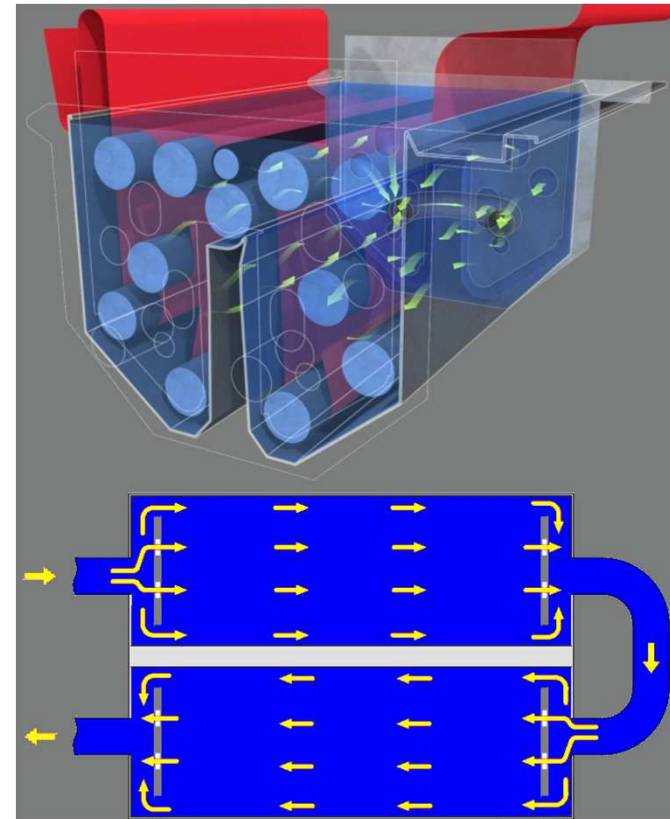


**Double Vario**  
Lifting system

## Double Vario Cross-flow circulation system

Perfect bath circulation to reach a better and evenly dye effect.

- Homogeneity in indigo, caustic soda and hydro concentration
- Best center selvage result
- Elimination of the dead zones
- Circulation rate up to 10 times x hour



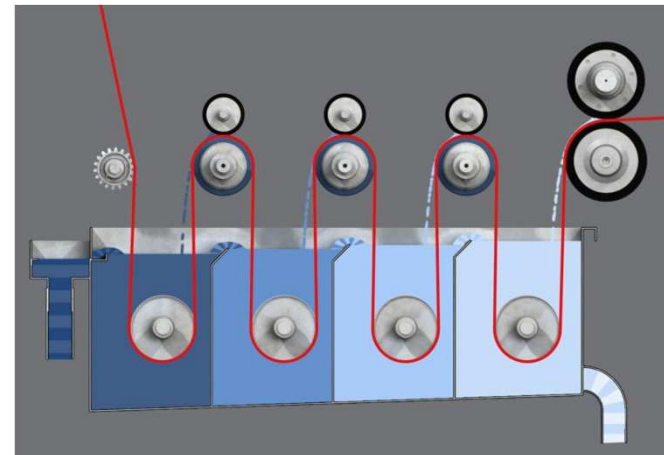
**Double Vario**  
Circulation system with cross-flow

## ProDye Eco Wash

Washing cascade system with 4 separate compartments and intermediate squeezing units.

- Best washing performance by counter flow
- Circulation system for chemical treatment.

**Up to 30% reduction of water consumption**



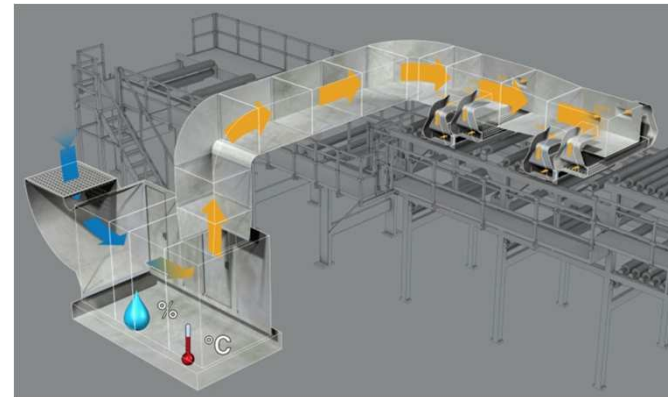
**Eco Wash**  
Washing cascade system

## ProDye Quick oxidation

Temperature controlled oxidation by air blowing unit for a reproducible quality.

- Increasing dyestuff pick-up with hot airflow
- 30% reduction of oxidation length

**Less yarn waste and better tone uniformity of the warp sheet**



**Quick oxidation**  
Temperature controlled oxidation

## ProDye Double head system

In case of lightweight denim ( < 200 g/m in warp), the double head system gives us the possibility to double productivity.

- Because of our unique features, Karl Mayer is able to guarantee a perfect and uniform dye process with yarn density up to 140%.

**Double head gives us the possibility to run almost all lightweight articles in double sheet**



**Double head system**  
Double productivity



## ProDye

### Practical example of double sheet production

Number of Double Vario vat	: 6
Yarn count	: Ne 30 ring
Number of ends	: 7650 x 2
Oxidation length	: 35 m
Production speed	: 35 m/min
Indigo concentration	: 3 g/l
Indigo coverage on the yarn	: 4 %



**Denim shirt**  
Lightweight denim

**This means a production of 70 m/min of dyed warp**



## ProDye Know-how in Denim

Karl Mayer does not just have the best technology in the market, but also the best pre and after sales support.

For the benefit of our customer we can provide:

- **Product and key account managers:** to assist our customers with high competence in the implementation of the best solutions for their requirement
- **Indigo dye technologists:** to support our customers in the process optimization.

**Karl Mayer is the market leader and preferred supplier for the fashion denim producer**



**Fashion Denim**  
Total look

**KARL MAYER Textilmaschinenfabrik GmbH**

Postfach 1120 · 63166 Obertshausen · Brühlstraße 25 · 63179 Obertshausen · Germany  
T +49(0)6104 402-0 · F +49(0)6104 402-600 · [info@karlmayer.com](mailto:info@karlmayer.com) · [www.karlmayer.com](http://www.karlmayer.com)