

KARL MAYER as specialist will present its latest innovations in the denim sector

Denim has a unique appearance, it can be styled to create modern fashion looks, and is therefore a best-seller for producers of both high-fashion and classic garments. Just as important for the entire textile supply chain is the market for this indigo fabric. By constantly coming up with new developments, manufacturers are making the production process increasingly efficient and extending the design possibilities. One of the most successful manufacturers active in this field is KARL MAYER. This market leader in warp preparation (among other things) has combined the open-width dyeing technologies developed by the MOENUS-SUCKER Group, Benninger's Weaving Preparation Division and IRA L. Griffin, and has optimised its machine range. As a result, it has made a name for itself as a one-stop supplier of denim technology. It will be showing its latest innovations in this field at the ITMA ASIA + CITME fair on stand D 01 in hall E 3. More specifically, KARL MAYER will be showing a long chain beamer, a ball warper, a dye box and the Indigo-O-Matic.

DENIM processing technology

KARL MAYER has been focusing its R&D work in the denim field on integrating new functions and processes in the weaving preparatory stages. Combined sequences can improve quality, flexibility, economic viability and productivity along the entire production chain.

For many manufacturers, denim production begins with loading bobbins onto a creel. From there, the yarns are taken-off and brought together for the subsequent

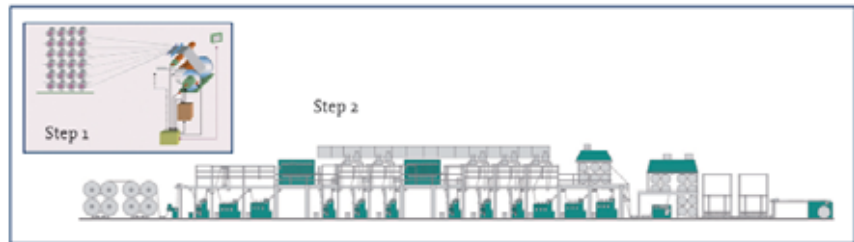
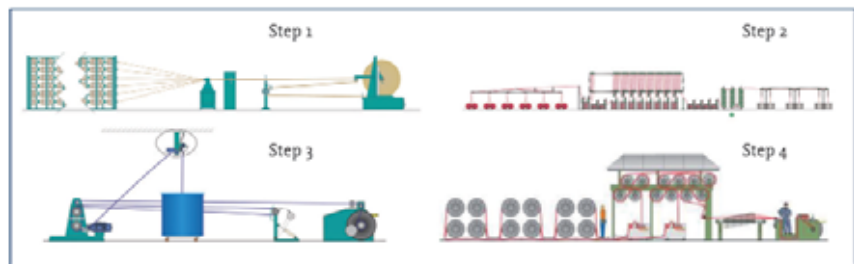


Fig. 1: Diagram of the SLASHER DYEING PROCESS (above)
The ROPE DYEING PROCESS (below).



dyeing process – onto a beam for the SLASHER DYEING PROCESS or to form a rope for the ROPE DYEING PROCESS.

The SLASHER DYEING PROCESS combines dyeing with sizing in a semi-continuous sequence. In this combined processing technique, the yarns are taken-off together from eight to 24 beams under a controlled tension, fed through a dyeing and sizing section, and finally wound onto a weaving beam.

The discontinuous ROPE DYEING PROCESS operates with wound ropes, the so-called balls. The ropes from between 12 and 36 of these balls are taken-off without being under a controlled tension, fed to the dyeing section, and then coiled into cans. They are then opened out for the subsequent sizing process and the yarns are wound next to each other onto a beam. Between 8 and

24 beams run together under a controlled tension through the sizing machine. A beaming/winding process is the final stage in producing the warp beam. Fig. 1 shows diagrams of the SLASHER DYEING PROCESS and the ROPE DYEING PROCESS.

Both processes are becoming more and more important because of the different quality requirements of the market, and KARL MAYER is able to offer the right sort of machine for both processing sequences.

KARL MAYER's denim equipment

With its denim machines, KARL MAYER is able to meet the requirements of the market in terms of efficiency, quality and flexibility. Some clear trends have emerged here over the last few years. The quality standards of the big market suppliers, such as Wrangler Blue Bell and Levi Strauss, have become the accepted benchmarks for denim products. At the same time, the move away from traditional denim work clothing towards more avantgarde, high-fashion leisure wear means that the processing machinery has to be extremely flexible and adaptable.

And, of course, lucrative markets demand a technology that offers maximum economic viability and a competitive cost:benefit ratio.

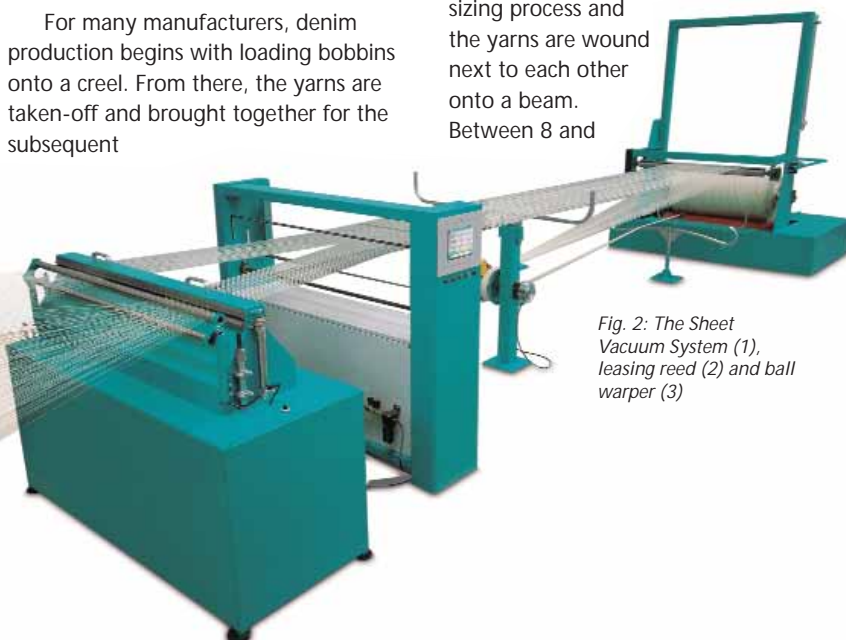


Fig. 2: The Sheet Vacuum System (1), leasing reed (2) and ball warper (3)

KARL MAYER is able to meet the many demands made of machine manufacturers with its range of state-of-the-art machines especially for the denim sector.

Ball warper

The ball warper (Fig. 2) is used at the beginning of the ROPE DYEING PROCESS for bringing the yarns together from the creel to form a rope. This machine guarantees controlled, accurate rope formation. To do this, it operates with a controlled tension and handles the yarns very gently.

The technical features of the machine include pneumatically controlled disc brake technology (Fig. 3) for synchronous braking, a semi-automatic pneumatic cylinder for loading and unloading the beams (Fig. 4), and the integrated Sheet Vacuum Suction (SVS) system for removing fly, dirt and other loose particles from the yarn sheet. Keeping the processing environment clean reduces contamination during the wet treatment processes.

Particular care is taken with the package build on the ball warper. The machine produces top of the line windings thanks to a traverse mechanism with circumference-dependent image interference, whilst ball tracks and compression cylinders with optimum leverage ratios produce wound packages having a perfectly parallel build.



Fig. 3: The braking system.



Fig. 4: The device for loading and unloading the beam.

The traverse, compression pressure and the yarn tension (in conjunction with the DiscTens) are set automatically to the optimum values in each case. Data relating to the number of yarns, the yarn count and the total length form the basis of the self-regulation system, and the values can be input very easily using a newly developed, intelligent input system.

The guide rollers in front of (Fig. 5) and at the ball warper keep the yarn sheet in an open-width state for longer – a feature that is useful for detecting and dealing with yarn breakages optimally. All in all, the entire machine, with its ergonomic design, meets all the principles of first-rate user-friendliness.

KARL MAYER's ball warper operates at a width of 1,200 mm and can reach production speeds of up to 400 m/min.

Long chain beamer

The long chain beamer (Fig. 6) processes ropes to form beams - a process that has to be carried out after dyeing in the ROPE DYEING PROCESS. The machine produces beams having diameters of up to 1,000 mm. It has a working width of 1,800 mm and can reach maximum production speeds of 500 m/min.

A number of technical features guarantee quality, maximum efficiency and simple handling. The yarn tension is controlled automatically during the entire process by a dancer assembly. The prerequisites for this are efficient motors and data on the number of yarns and the yarn count, which are input in advance.

In addition, a "strummer" is in front of the main reed facilitates opening of the yarn sheet. An unrestricted recovery system, which makes it easier to repair yarn breakages, comes as standard. The long chain beamer is extremely easy to



Fig. 5: The guide roller for dealing with yarn breakages easily.

operate, even for inexperienced operators, since the data can be input easily via a touchscreen and very few measurements have to be taken. Its compact construction also means that it requires less space in the production hall.

Optional features, which offer advantages in terms of ergonomics, quality and efficiency, include a tub turner for preventing the rope from twisting, a lamellae yarn breakage detector, which enables two machines to be supervised by one operator, and a press roller for increasing the beam capacity by 20 to 25%.

The Indigo-O-Matic

The Indigo-O-Matic multicolour dyeing machine features a modular construction (Fig. 7). In every configuration, it combines efficient components and offers manufacturers the flexible machines they need to operate on the denim market with all its many requirements in the fashion, leisure wear and workwear sectors.

Main components of the Indigo-O-Matic

- ❖ The Indigo Dyeing Pilot, as the key element of the machine, involves computer-controlled handling of the dyes and chemicals in terms of their storage, preparation and dosing. This reduces wastage and environmental loads.

- ❖ The **KAMCOS®** control system, which accurately displays and optimally adjusts the elongation and tension values in every zone for every processing stage in the machine. Any faults and weak places in the processing chain can therefore be detected easily and dealt with efficiently.
- ❖ The **WarpLink** system for fully automatic beam changing. This system reduces waste by about 50% when changing the sets, and it is also possible to process jobs having short running lengths of up to 10,000 m, without any loss of productivity.
- ❖ The **VARIO** system for ROPE- and SLASHER-DYEING, which is based on a uniform process control system and machine philosophy. The VARIO combines a high circulation rate with precise distribution when handling the liquid, and is especially suitable for producing highly concentrated, very dark shades. The VARIO DOUBLE is a modular dyeing unit, which can be used flexibly for both conventional as well as nitrogen or reactor dyeing.
- ❖ A steamer with special entry and exit openings for avoiding water vapour clouds.
- ❖ A quick oxidation system for stabilising the climatic conditions during processing. The **QUICK OXIDATION system** reduces the length of the air passage by more than 30% and works according to the cross flow principle. This method involves blowing air intensively at a constant temperature into the reaction zone to achieve concentrated and completely uniform indigo oxidation, thus improving fixing of the indigo pigment onto the yarn.
- ❖ The **eco wash trough**, which operates with roughly 10-15% less wash water than similar systems.
- ❖ The compact **CSB size box**, which operates with the tried-and-tested triple-dip and double-nip squeezing



Fig. 6: The long chain beamer.

technology, and guarantees uniform size application over the entire surface.

- ❖ The BM beaming machine, which guarantees a constant and uniform package build.
 - ❖ A completely automated chemicals kitchen and a measuring system for the indigo dyeing process.
- All the process components can be combined without any interface problems, and the yarn is fed accurately, reliably and compactly through the system. State-of-the-art components guarantee optimum results. These include high-resolution, high-precision yarn tension measuring devices, yarn guides with conically tapered sides, guide rollers having a special grooved design, and a lifting roller system for equalising different yarn consumption values. The yarn is also handled gently by means of an accurate, continuous yarn guide control system.

With its high-precision components, the Indig-O-Matic produces warp beams having totally uniform working widths and homogeneous yarn volumes.

KARL MAYER's production equipment thus offers a high level of machine efficiency, reproducibility and machine availability - performance features which guarantee a high level of efficiency when producing denim.

In addition to the ball warper, long chain beamer and Indig-O-Matic, which will be on show at ITMA ASIA + CITME, KARL MAYER is complementing its DENIM processing range with suitable machines and components from its general product portfolio. These mainly include the Size-O-Matic sizing machine for processing staple-fibre-yarns, which is used when carrying out sizing and dyeing separately, the WarpDirect® direct warping machine, and various creels for supplying the yarns.

KARL MAYER is expected to show a new creel system in Shanghai. This new system is suitable for both the SLASHER DYEING and ROPE DYEING PROCESSES and operates using the new DiscTens yarn tensioner. It was designed especially to meet the requirements of customers operating on the denim market. The visitors can see Karl Mayer technology at its stand D 01 located in at hall E 3 ♦

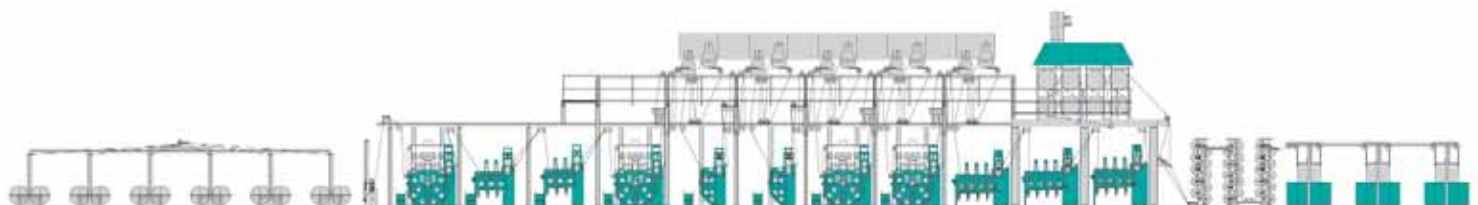


Fig. 7: A diagram of the Indig-O-Matic for the ROPE DYEING PROCESS