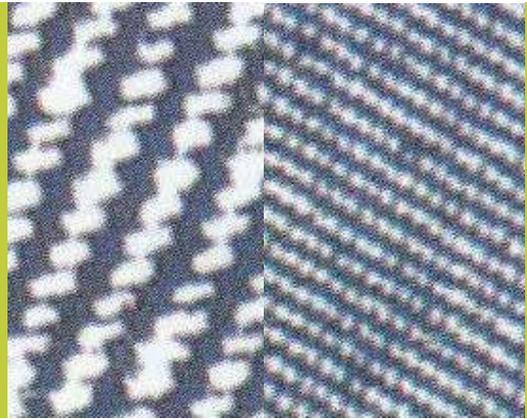




CHOPRA
DHALL
GROUP

Delivering High Performance
Since 1959



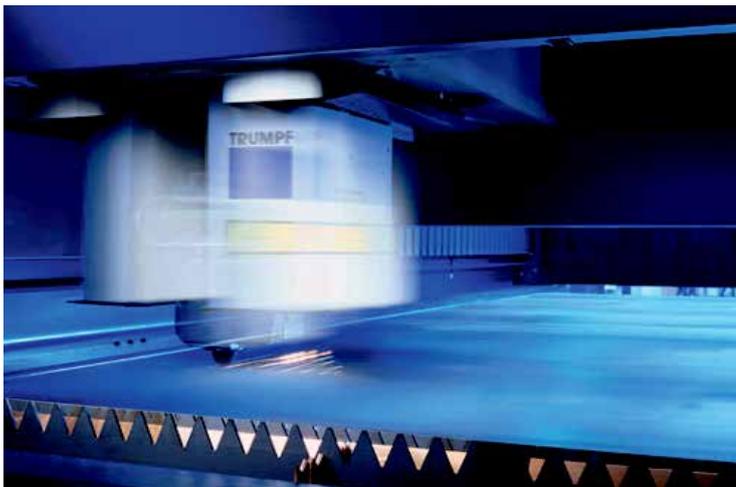
INNOSHRINK

PRODUCT RANGE FOR COMPRESSIVE SHRINKING

COMPANY HISTORY

■ COMPANY WITH TRADITION AND FUTURE

Established in 1959, Chopra-Dhall Group is one of the world's leading manufactures of finishing and processing machines and still a family owned company. Chopra-Dhall Group has proven track record of over 50 years in delivering world-class products to more than 2000 satisfied customers in India and over 30 countries world-wide including Japan, Australia, United Kingdom, Bangladesh and Thailand. Chopra-Dhall Group's list of international customers includes well-know premium textile industry leaders such as Arvind, Raymond, Alok Industries, Bombay Dyeing, Pradeep Overseas and Nahar Group in India, and Sunflag Industries (Nigeria), Ha-meem, Rahim Group(Bangladesh), Toray Group(Japan) and Bradmill (Australia) in international textile market. Chopra-Dhall's product portfolio contains the following machine range : Continuous Bleaching, Washing and Mercerizing, Pad Dry and Pad Steam Ranges, Cold Pad-Batch Dyeing ranges with S-ROLL padder, S-ROLL dye & finishing padders, Jigger, Drying Ranges, Stenter & Relax dryers, Shrinking Ranges and Vacuum Foam Finishing Ranges. Chopra-Dhall Group also offers Zimmer(US)-Chopra-Dhall rotary nickel screens developed using the latest technology from Zimmer(US) and highest quality standards to deliver a world-class product of unmatched performance & quality.



Chopra-Dhall Group deploys the latest trends in manufacturing technology(include CNC lathes, Trumf laser sheet-cutting, HACO CNC bending) to build our machines at our engineering complex in Ahmedabad, Gujarat. Backed by strong after-sales service and a customer-oriented perspective, Chopra-Dhall Group is looking to deliver exceptional value and strong Return on Investment(ROI) for our target customers. In order to develop world-class capabilities in textile finishing and processing machines, DHALL GROUP has formed strategic partnerships with several key industry leaders, such as REISKY MAQUINAS/BRA (former subsidiary of KÜSTERS/GER), ZIMMER/US & DOLFUSS MÜLLER/F.

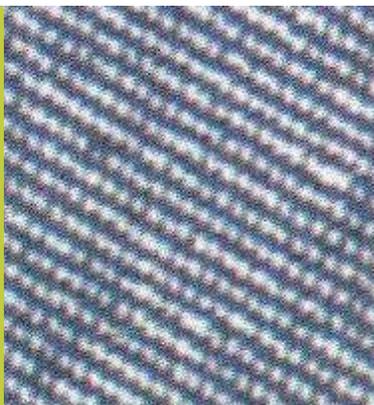


INTRODUCTION TO SANFORIZING

- Sanforizing is a mechanical finishing process used for cotton fabrics mainly and most textiles made from natural or chemical fibres, patented by Sanford Lockwood Cluett (1874–1968) in 1930. It is a method of stretching, shrinking and fixing the woven cloth in both length and width before cutting and producing, to reduce the shrinkage which would otherwise occur after washing.
- The cloth is continually fed into the sanforizing machine and therein moistened with either water or steam. A rotating cylinder presses a rubber sleeve against, heated, rotating cylinder. Thereby the sleeve briefly gets compressed and laterally expanded, afterwards relaxing to its normal thickness. The cloth to be treated is transported between rubber sleeve and heated cylinder and is forced to follow this brief compression and lateral expansion, and relaxation. It is thus shrunk.
- The greater the pressure applied to the rubber sleeve during the sanforizing process, the less shrinking will occur once the shirt is in use. The process may be repeated.



Before Shrinking



After Shrinking

■ SIGNIFICANCE OF SANFORIZING

During spinning, weaving, bleaching, dyeing and the various finishing processes, yarns and cloth are under a continuous tension. Yarns and/or fabrics are not fixed materials. They consist of separate, stretchable fibers which submit to the tension. In other words, fabrics do stretch in length and width. The tension within the yarns, which is caused by this stretching, can be eliminated when the friction within the fabric is reduced.

This reduction in friction occurs during laundering where both water and soap act as a lubricant. The lubricant, along with the mechanical action of the washer, helps the fibers relax and contract to their original length before the elongation takes place. This means that the fabric shrinks and recaptures its original equilibrium.

Sanforizing is critical to set the residual shrinkage properties of the fabric and lend dimensional stability to the garments converted from fabric. The importance of sanforizing is to ensure one can shrink fabrics in such a way that textiles made up of these fabrics do not shrink during washing or future usage.

THE PROCESS OF SANFORIZING

- Sanforizing process is based on the principle that when an elastic rubber blanket is passed around a metal roller in contact with it, its outer surface is process extended and the inner surface contracted. So the process is called controlled compressive shrinkage process.

The process of sanforizing includes the stretching and manipulation of the fabric before it is washed. During the sanforizing process, the fabric is fed into a sanforizing machine where it is treated with water or steam to promote shrinkage, then pressed against a heated rubber blanket to relax and re-contract the fibers.

The amount of potential wash shrinkage must be determined prior to shrinking. A full width sample is wash-tested according to the test method. After the lengthwise and width wise shrinkage has been determined, the compressive shrinkage machine can be adjusted accordingly.

The cloth is continually fed into the sanforizing machine and therein moistened with either water or steam. A rotating cylinder presses a rubber blanket against another, heated, rotating cylinder. Thereby the sleeve briefly gets compressed and laterally expanded, afterwards relaxing to its normal thickness. The cloth to be treated is transported between rubber sleeve and heated cylinder and is forced to follow this brief compression and lateral expansion, and relaxation. It thus gets shrunk.

The greater the pressure applied to the rubber sleeve, the bigger the shrinking afterwards. The process may be repeated.



INNOSHRINK

■ COMPRESSIVE SHRINKING IN WOVEN FABRICS

Standard design configuration of compressive shrinking range for woven fabrics involves passing the fabric through a moistening device to lubricate the fabrics and promote shrinkability within the fabric. Normally, the fabric must be moistened in such a way every strand achieves moisture pickup of nearly 8-10% to allow compression of fabric with very little resistance. Then the fabric is guided to the Rubber Belt Unit section of the range. By squeezing the endless rubber belt between the pressure roll and the heated rubber belt cylinder, we obtain elastic stretching of the rubber belt surface. This point is known as the pressure zone. As the fabric leaves the pressure zone, the rubber belt recovers its original dimensions carrying the fabric with it. The effect of this action is shortening the warp yarn thereby packing the filling yarns closer together. At this moment shrinkage occurs.

After compression with the rubber belt, the fabric enters the Felt Calendar unit wherein the fabrics are locked in the shrunken state by removing residual moisture from the fabric.



■ COMPRESSIVE SHRINKING IN DENIM FABRICS

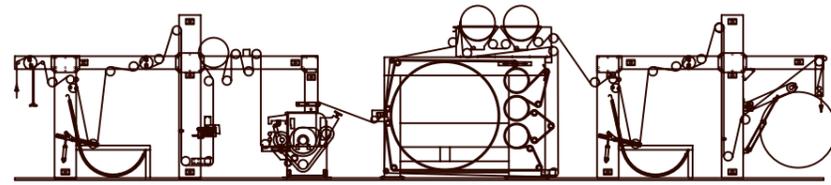
Chopra-Dhall Group offers three primary variants in compressive shrinking lines for denim fabrics. In the Wet Finishing configuration, the fabric is impregnated with chemicals post-brushing and then fed into the weft-straightening module after suitable skew correction. Once the weft is straightened, the fabric is then dried on vertical drying range before being navigated into the traditional sanforizing process. Moisture on the fabric can be suitably controlled using moisture measurement units at the outlet of the drying range.

Foam finishing involves replacing the more expensive Wet Finishing application unit with Foam Application unit at the input of the sanforizing process. Once the fabric is duly brushed, it is navigated through a foam application trough to ensure sufficient moisture pickup before the sanforizing process. Post impregnation, the fabric is cooled and the weft corrected before the traditional sanforizing process.

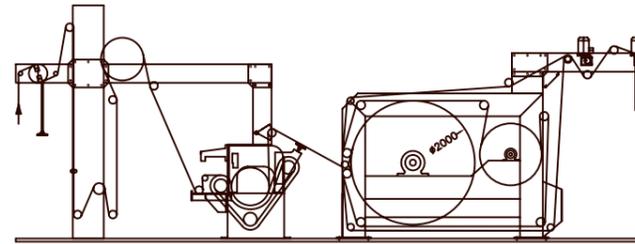
Chopra-Dhall Group's latest innovation in sanforizing technology centers around the kiss-roll concept. In this setup, both sides of the fabric skim over the liquor surface (akin to "kissing" the liquor) before passing through the rotor-damping system that regulates a defined stream of micro-droplets and ensures a uniform liquid application layer on both sides before the traditional sanforizing process.



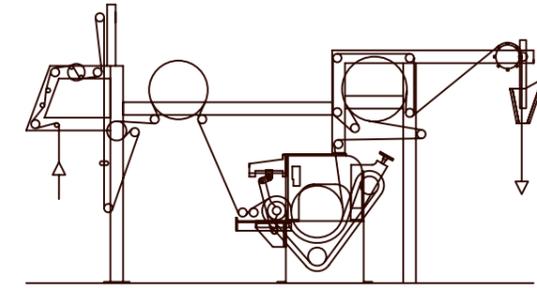
DESIGN CONFIGURATIONS



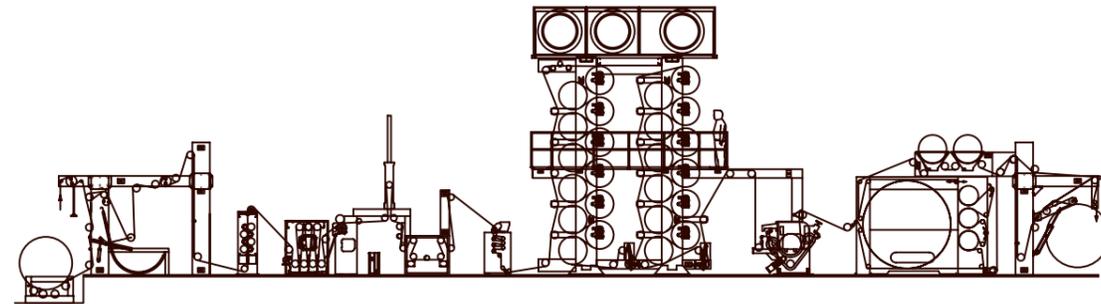
INNOSHRINK-1: Compressive Shrinking Range for woven fabrics



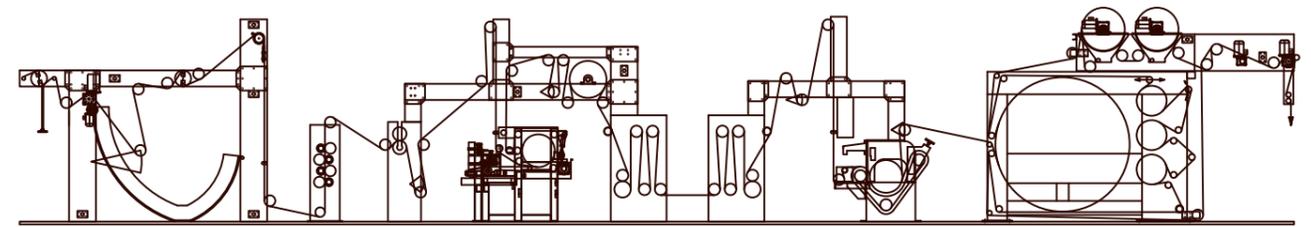
INNOSHRINK-2A: Compressive Shrinking Range for woven fabrics (alternate configuration)



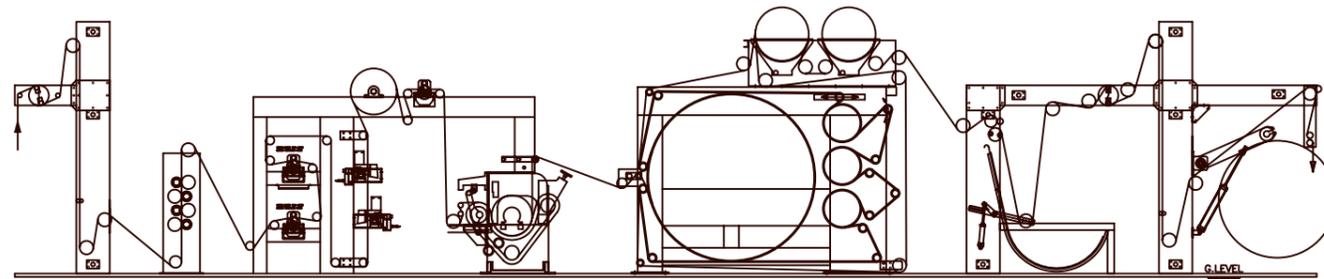
INNOSHRINK-2B: Compressive Shrinking Range for woven fabrics (shorter production runs)



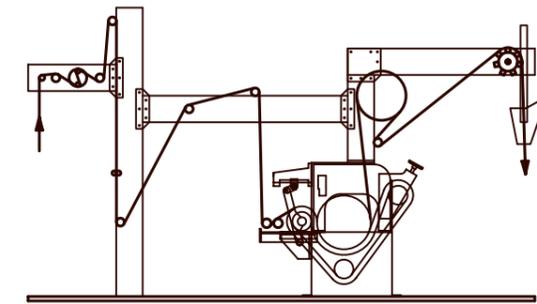
INNOSHRINK-3: Wet Finishing Range for denim fabrics



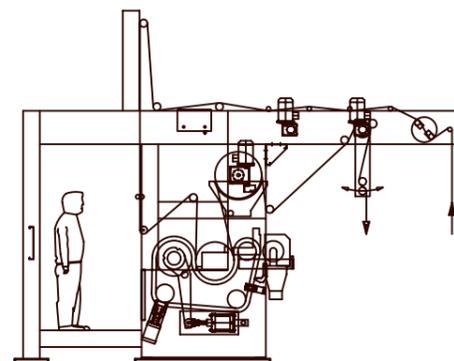
INNOSHRINK-4: Vacuum Foam Finishing Range for denim fabrics



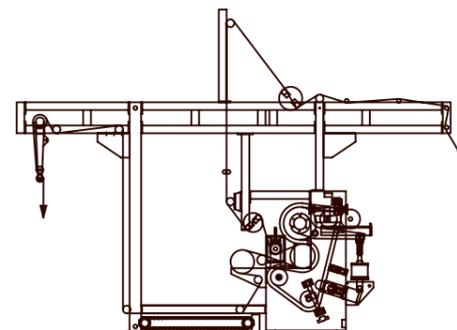
INNOSHRINK-5: Compressive Shrinking Range for denim fabrics (kiss-roll technology)



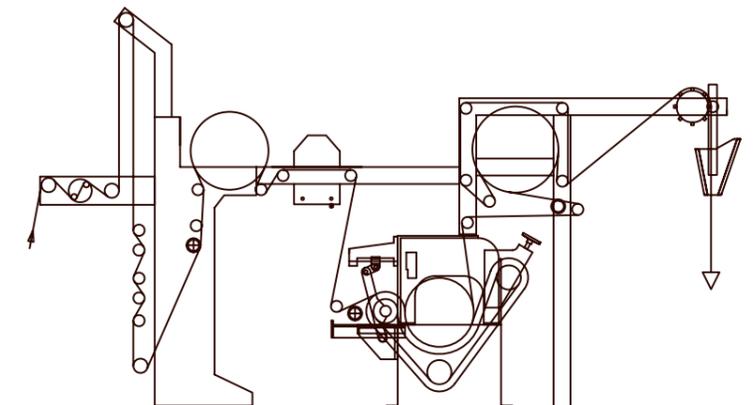
INNOSHRINK-6: Rubber Belt Unit for compressive shrinking in polyester fabrics



INNOSHRINK-7A: H-Type Comfin Range for polyester suitings



INNOSHRINK-7B: Comfin Range for polyester light-weight fabrics



INNOSHRINK-8: Compressive Shrinking Range for open-width knit fabrics

INNOSHRINK

■ COMPRESSIVE SHRINKING IN POLYESTER FABRICS

Chopra-Dhall Group offers two primary variants of the compressive shrinking line for polyester fabrics keeping in mind the fabric construction and desired output qualities. The first variant involves simply the Rubber Belt Unit configuration which suffices to set the feel and shrinkage properties in polyester fabrics. Second variant refers to the Comfin range which is critical to lend soft feel to the fabric by breaking the stiffness in the fabric construction.

■ COMPRESSIVE SHRINKING IN OPEN-WIDTH KNIT FABRICS

For knits fabric, the proposed configuration ensures sufficient moisture pickup and perfect sanforizing results and superior soft feel while provisioning sufficient mechanisms for preventing selvedge curl-up in open-width knits. To be added later



SALIENT FEATURES

To ensure effective sanforizing results at optimum energy consumption, Chopra-Dhall Group's proposed line of compressive shrinking configurations deliver the following distinctive advantages

■ SUPERIOR PRICE-PERFORMANCE RATIO

Following world-class design and manufacturing practices, Chopra-Dhall Group ensures superior price-performance ratio for the final product when compared against its competitive set for sanforizing process solutions.

■ VERSATILE DESIGN PORTFOLIO

Chopra-Dhall Group has developed a versatile design portfolio to address specific customer needs based on distinctive requirements of fabric and process imperatives.

■ DEEP EXPERIENCE AND DOMAIN EXPERTISE IN SANFORIZING TECHNOLOGY

As the world's largest maker of compressive shrinking lines with over 2,000 installations across 25 countries in past 50 years, Chopra-Dhall Group brings forth deep domain expertise and hands-on operational experience to deliver the best sanforizing results for the target application and fabric.



INNOSHRINK

■ THE DRIVE SYSTEM

All DHALL ranges are characterised by particularly comfortable plant control and drive technology. All main drives are implemented as frequency controlled A/C-gear motors. As far as mechanical conditions permit they work as direct drives without mechanical intermediate drives. The air-conditioned switch cabinet accommodates the electrical control units for all drives of the complete range. Likewise, the central control panel is equipped with an air-conditioning system. The central operating interface of the control panel can either be operated as a touch-screen or via mouse. Imported attributes such as presetting of fabric tension, quantity of water, chemical quantity defaults etc., can be made. A modem for remote service and maintenance of the range is certainly a standard feature. Frequency controllers can be offered standard from LENZE, ABB & SIEMENS and other systems.

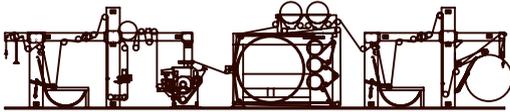


■ FREE FROM WRINKLES & CREASES

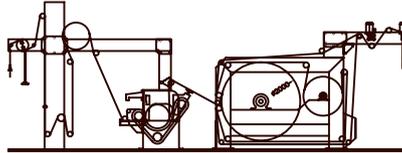
Large diameters for all guiding rollers prevent a formation of wrinkles and lateral displacement of the fabric. This is supported by computer controlled fabric tension, easy running external bearings with low frictional resistance; frequency controlled spiral spreader rollers as well as short distances between the guiding rollers. Load cells with a very sensitive tension range as well as pendulum and turning compensators guarantee a passage free from creases and wrinkles.

RANGE LAYOUT

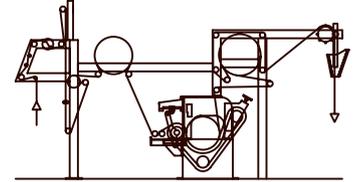
■ The classical plant examples specified herein are to give a short overview of the application range of the INNOSHRINK range. The intelligent modular unit assembly system permits the most differential range combinations.



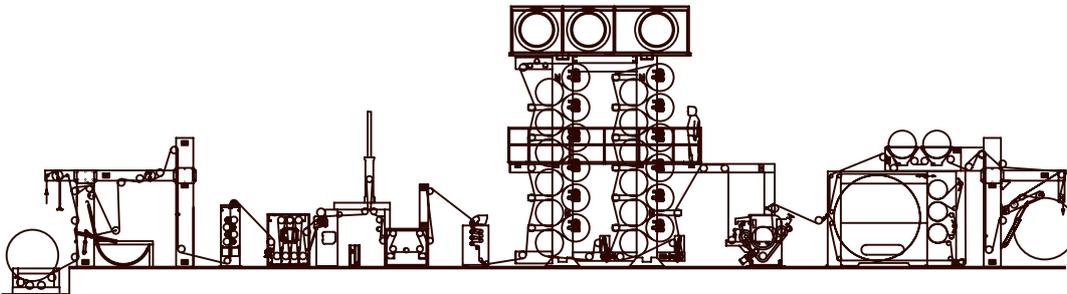
INNOSHRINK-1: Compressive Shrinking Range for woven fabrics



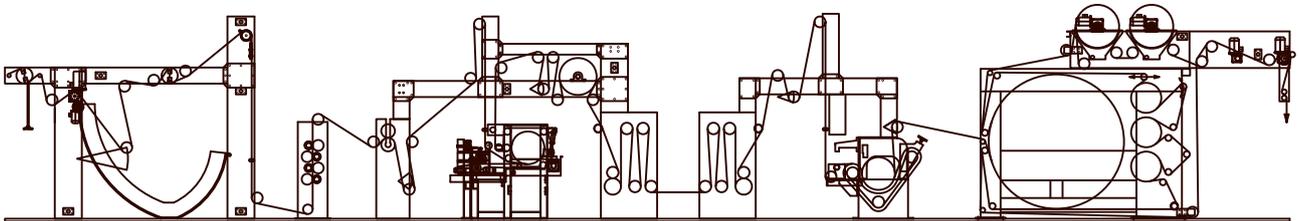
INNOSHRINK-2A: Compressive Shrinking Range for woven fabrics (alternate configuration)



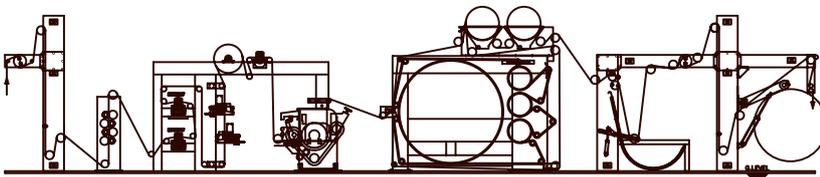
INNOSHRINK-2B: Compressive Shrinking Range for woven fabrics (shorter production runs)



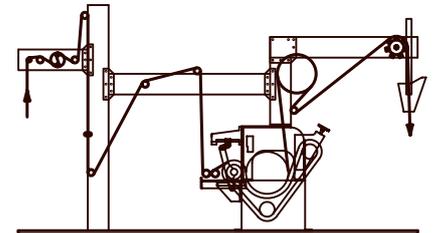
INNOSHRINK-3: Wet Finishing Range for denim fabrics



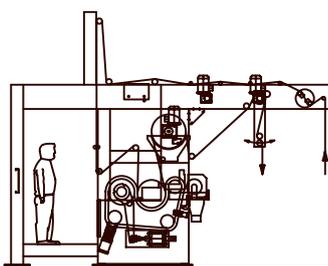
INNOSHRINK-4: Vacuum Foam Finishing Range for denim fabrics



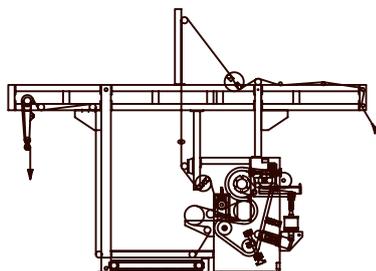
INNOSHRINK-5: Compressive Shrinking Range for denim fabrics (kiss-roll technology)



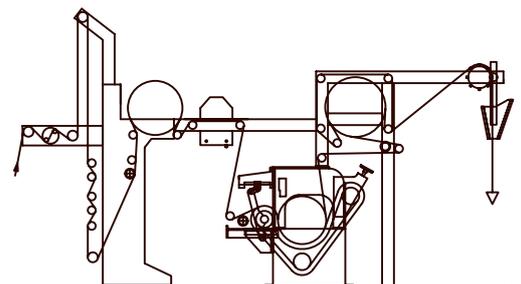
INNOSHRINK-6: Rubber Belt Unit for compressive shrinking in polyester fabrics



INNOSHRINK-7A: H-Type Comfin Range for polyester suitings



INNOSHRINK-7B: Comfin Range for polyester light-weight fabrics



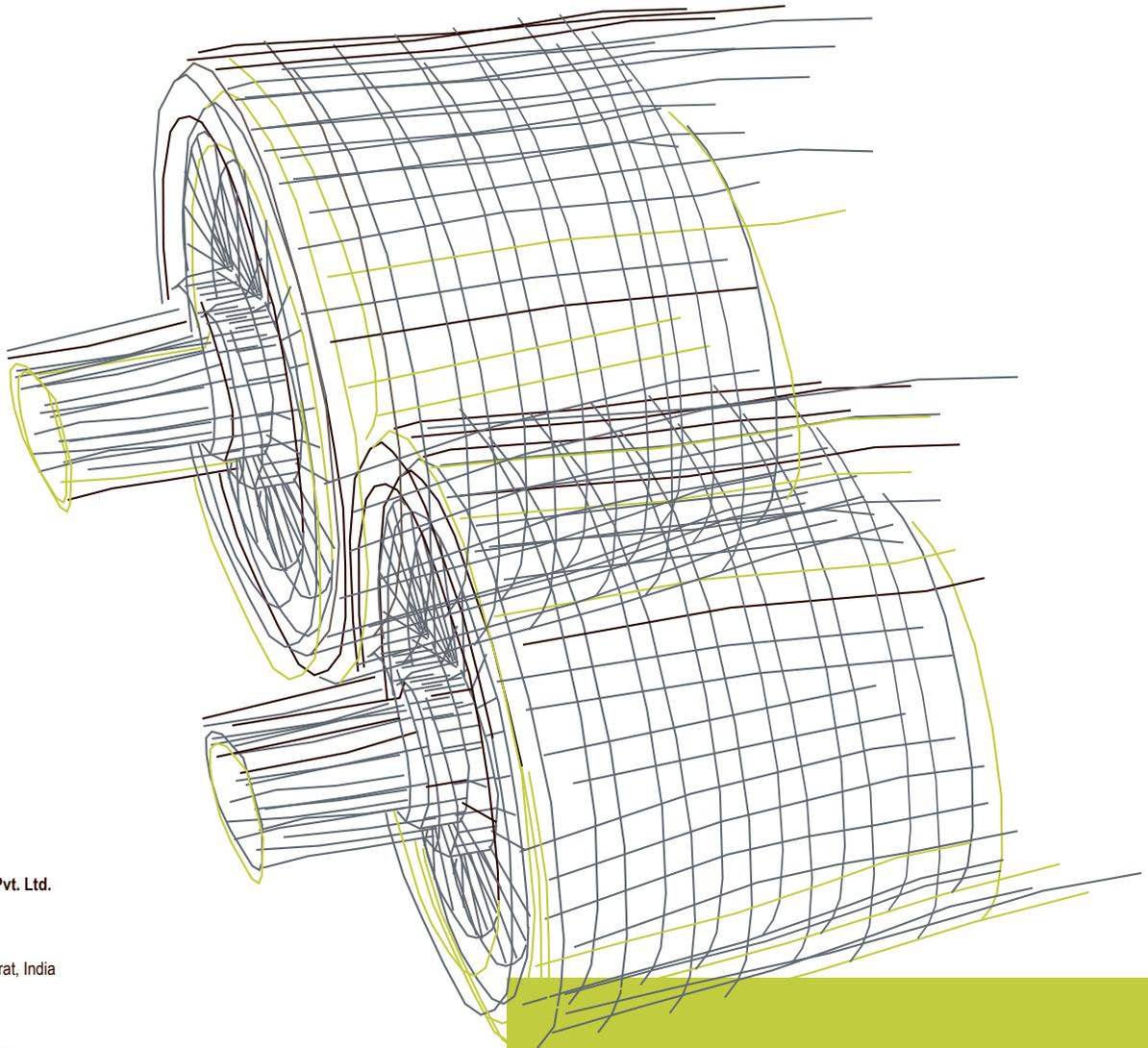
INNOSHRINK-8: Compressive Shrinking Range for open-width knit fabrics



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All dates and technical drawings shown in this brochure are subject to technical modification, 2016 Printed in India

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