

**JUPITER**

**INDIGO**



*Sheet Dyeing Sizing Range*

## ACCURATE WARP RESULTS IN OPTIMISED WEAVING EFFICIENCY

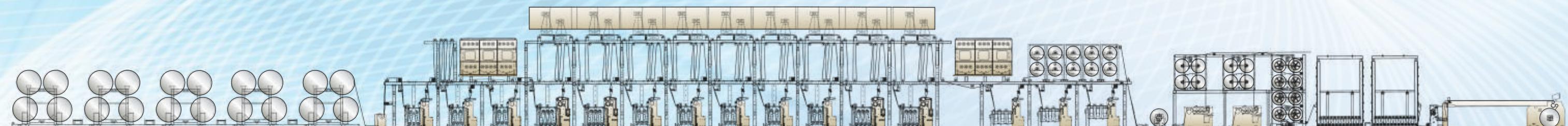
Technologically advanced machine with ecological Indigo Dyeing and high quality warps are important in weaving shed. Jupiter Indigo Dyeing Sizing Range offers optimum production with flexible operative system along with innovation and quality control.

## INCREASED PRODUCTION LEADS TO BETTER PLANT EFFICIENCY

Presently, manufacturers concentrate on increasing the production of the Dyeing plant by incorporating larger diameter of the Warper beams and controlling the warp tension through Load cells.

Creel - The creel is provided with suitable brake system of proportionate type with chain and braking pads automatically operated with the help of load cell fitted on both side. The operator has to set required unwinding tension on the MMI (Man Machine Interface).

On account of quick beam change at the Headstock and corresponding warp yarn storage in Accumulator, higher production is achieved. Now, the Accumulator is also installed after the warper beam creel as well.



## PRE-TREATMENT OF WARP SHEET

Presently, the Dyeing Ranges have many options for pre-treatment :



- Pre-wetting device for the warp sheet
- Additional dye bath for different colours
- Additional dye bath for Mercerizing to enhance the luster and better penetration of Indigo dye
- Steamer with saturator (condensate separator), maximum working temperature approx. 102° to 105° (super saturated steam required). Installed above 8th dye bath with 35 meters airing passage

## MULTI COLOUR WARP DYEING FLEXIBILITY

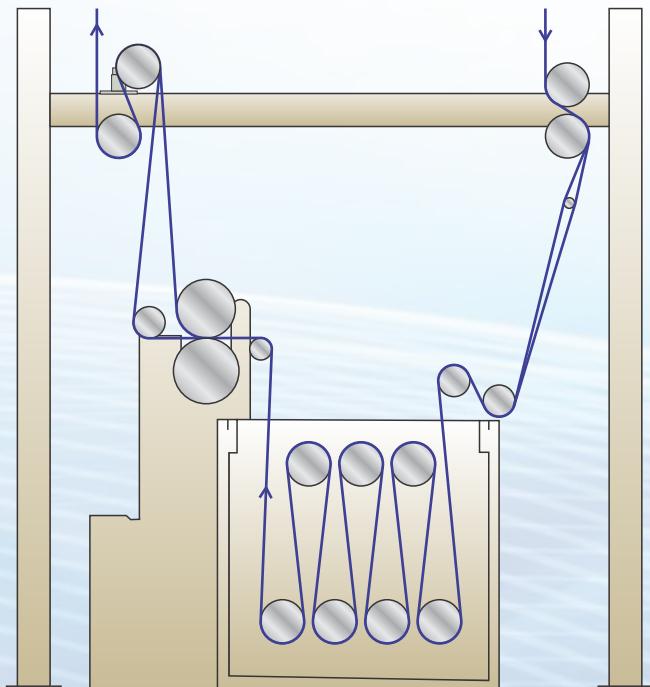
- Due to multi-tank process engineering, the continuous warp yarn dyeing machine can also be used for topping or dyeing with different categories of dye, such as Sulphur, Direct, Reactive, Naphthol, Pigment or Indanthrene dyestuffs. This is done with help of using additional tanks or bypassing certain tanks.
- While using different type of Dyestuffs, it is important to match the immersion time and Dye liquor quantity of different Dyestuffs. Adjustable immersion rolls also help in meeting the required immersion time, liquor quantity, number of squeezing, etc. to get the required depth of the Dye shade.
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- The present trend of Denim has shifted from a traditional 14 oz Denim to lighter Denims for fashion and casual wear. Processing of such light Denims need flexible approach to meet fast changing fashions. With the help of multi-tank concept, it has become possible to go in for continuous multi-colour warp dyeing - cum -sizing plant. This helps us to optimize the use of Dyes / Chemicals in Denim plant turning out to be economical and eco friendly.



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## DYEING TANKS

Dyeing Tanks of 2000 ltrs capacity are self supporting type, entirely manufactured from 316 S.S. sheets and equipped with direct & indirect steam coil with automatic temperature control. It has 7Nos. 316 S.S. guide rollers, warp content approx 9 mtrs with 100KN squeezing pressure. Equi-pressure design top squeeze roller. Bottom squeeze roll driven by A.C. frequency drives and gears motor synchronized with the help of load cell.



## ADVANTAGES OF MULTICOLOUR WARP DYEING RANGE

- Multi-colour Capability with Flexible Tank Utilization
- Reproducible Computerized Process Control
- Perfect Warp Control
- High Production
- Eco Friendly Due to Low Dye / Chemical Consumption
- Multi-motor A.C. Frequency Drive
- Optimum Dye Fastness and Uniform Shade
- Uniform Dyeing Due to Cross Flow Circulation / Continuous

## UNIFORM DYE METERING FROM START TO FINISH OF THE BEAM optional

The Excellent Dosing system for Dyestuff and Chemicals in this Dyeing Range is the heart of the Plant. Indigo vat, Hydrosulphite and Caustic soda are added continuously as per the calculated quantity and the machine speed. This avoids difference in colour shades along the length of the dyed warp sheet.



Online pH & Redox potential indicator and controller provided with the machine also ensure uniform colour shade. This guarantees process reliability and reproducibility of the results in subsequent batches.

This optimizes Indigo Liquor stability needed for fast and uniform dyeing. The dye liquor is metered continuously by means of precise intermittent batching depending upon the length of warp sheet processed and the amount of liquor consumed in the dyeing tank.

## QUICK OXIDATION

- Quick Oxidation / Aeration With Constant Air Cross Flow At Controlled Temperature
- Along with good Dyeing, the warp running properties are also equally important in Weaving Shed.
- Quick Oxidation / Aeration - The tank equipped with airing passage consists of 316 S.S. fluted roller shaving Ø 150 mm approx. Warp length approx 28 mtrs., with quick oxidation.



- The incorporation of a Quick Oxidation / Aeration Section in the Dyeing Range reduces the length of the warp drawn into machine and number of guide rollers by 50%, reducing thereby stress on the yarn.
- In this, the warp sheet across the width is treated with cross flow of air at gentle pressure and constant temperature, thereby accelerating the oxidation process. Fluted guide rolls with large diameter also guarantee a parallel warp sheet without any width shrinkage.

## WARP RUNNING PROPERTIES OPTIMIZED

- Yarn passage is reduced by 50%.
- Equal cross-flow of air through out the width and length of warp sheet.
- Constant air flow with constant pressure and temperature to increase oxidation process.

## ACCUMULATOR

One hydraulic storage device (Accumulator) In two parts each capacity of 72 mtrs total 144 mtrs capacity. It is important to keep the process in continuity when beam is changed to minimise shade variation.



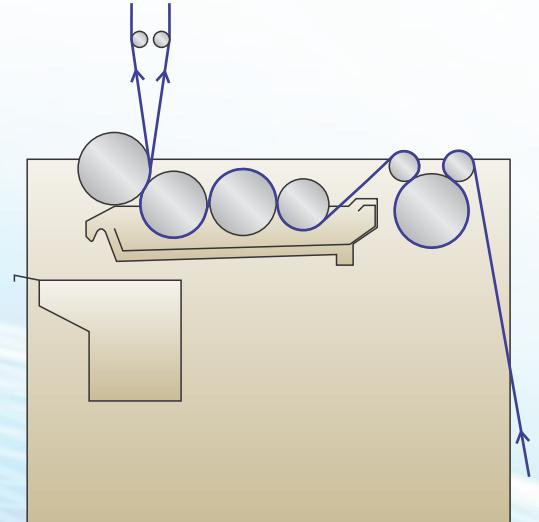
## ECO SIZE BOX MODEL

4 roller design with positive feed device, size circulating device .bottom squeeze roll manufacture from S.S 316 quality tube is driven by asynchronous gear motor. Tension is control between positive feed roll and bottom roll with the help of IP 65 protection load cell.

1<sup>st</sup> rubber coated squeezing roller having 220mm Ø with shore hardness 65°-70°. The squeezing pressure is regulated upto 15 KN.

2<sup>nd</sup> rubber coated squeezing roller having 240mm Ø with shore hardness 75°-80° having anti-deflection design. The squeeze pressure is regulated upto 40 KN.

This provides uniform squeezing across the width and reduce the tendency of warp sheet to stick to the roller surface and there by reduce hairiness.



## MOISTURE CONTROL

Moisture content in the sized warp sheet is maintained with the help of sensors mounted on the sized warp sheet across it's width, at the dryer exit, by regulating the machine speed through PLC.



## HEAD STOCK

Beam doffing & donning and beam inserting are done automatically by pressing a single switch. Integrated pneumatically acting beam pressing device is provided at the center to prepare compact beam, Drag roller is driven by maintenance free asynchronous gear motor.

Weavers beam drive with clock-wise and anti clock-wise rotation of motor through maintenance free asynchronous gear motor. MMI provided for the operator to control the entire operation of machine by controlling function keys. Also provided are Oiling / Waxing Device and PLEVA Moisture Measuring Unit and online trouble shooting system.



## PROGRAMMING OF THE MACHINE

The drive, temperature of cylinders & size box, tension in different zones, squeezing roll pressure and warper beam braking pressure, all are controlled through PLC and can be effectively controlled through user friendly HMI (Human Machine Interface) provided at the head stock. This can also be provided in local languages for ease of operator. Besides the push button stations, a central consol is also provided with the machine which gives flexibility to the operator to operate the machine from any place along the length of machine.



## COLOUR & SIZE KITCHEN

Pre-wetting Solution Mixing Vessel, Colour Preparation Vessel, Sulpher Black Vessel, Size Cooking Vessel and Size Storage Vessel are provided in required numbers along with suitable Liquor Dosing & filter for Colour Kitchen.



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**WARPING | LONG CHAIN BEAMER | BALL WARPING | SIZING  
INDIGO SHEET DYEING SIZING RANGE | INDIGO ROPE DYEING**

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