High Speed Multi-Cylinder Sizing Machine
with 7 point Inverter Drive with PLC for Spun Yarn

Technical Brochure

Amritlakshmi
Where every Machine is a Commitment
ABOUT US

The Amritlakshmi Group of Companies has been in the Textile Machinery field since 1966 when Shri K.C. Brahmachari visualized the oncoming industrialization and set up a Trading business of Textile Machinery Manufactured by several principals.

In 1970 Mr. N.K Brahmachari joined the Agency and Trading business but after few years with sufficient "Hands on experience" incorporated in 1977 Amritlakshmi Machine Works at Umbergaon, Gujarat, India since 1978 and as a Pioneer company manufactured Weaving Preparation Machinery since 1979 and since then AMRITLAKSHMI has been in the field of Textile Machinery Manufacturing since last 35 years and has been manufacturing:

- HIGH SPEED DIRECT WARPING MACHINES WITH CREAMELS OF DIFFERENT CAPACITIES.
- MULTI CYLINDER SIZING MACHINES OF DIFFERENT MODELS for SPUN and FILAMENT YARN be it 100% Cotton or its Blends like PV, PC, Tencel, Viscose, Jute, etc. as well as 100% Polyester whether Zero Twist, Twisted, Intermingled / Rotoset, etc. as well as different deniers of Nylon Filament Yarn.

Right from day one Amritlakshmi has been pursuing Development of these machines Indigenously and throughout these years has always turned out machines not only of the current Technology but equivalent to machines manufactured abroad.

AMRITLAKSHMI has a proven and unbeatable record in the design, manufacture, supply and commissioning of Weaving Preparation Machinery in India and Abroad to the full satisfaction of each of their Clients.

AMRITLAKSHMI's success can be attributed to its flexibility to make tailor made machines to suit each Client and with full involvement right from "Concept to Commissioning" which has helped each Customer in being successful to produce High Quality Sized Yarn / Fabrics of all kind.

AMRITLAKSHMI over the years have successfully entrenched themselves as a Reputed & a Reliable Company by its performance based on the following:

- Excellence in Design & Quality
- Total Customer Satisfaction
- Continuous Developments, Innovations, etc.

Any kind of Shuttle or Shuttleless Weaving Machines to produce a High Quality Fabric requires a perfect and fault free sized yarn suitable for various varieties of Weaving Machines which can produce excellent quality fabrics and thus increases the output and profitability of the Weaving Mill.

Only highly developed Preparation machineries and processes like AMRITLAKSHMI's can assure a superior fabric and a competitive advantage required today.

The pre-requisite for such a success is a Controlled production on the Direct Warping & Sizing Machines with predetermined parameters monitored and controlled by various instruments incorporated on the Warping and Sizing Machines.

Having specialized in making tailor-made machines to cater to individual customers' needs for different varieties of Yarn, AMRITLAKSHMI has gained unmatched experience & expertise on this important subject in the last 35 years which has transformed the simple Drum Drive WARPERS and SLASHERS into a sophisticated art with the help of New Generation machines.

For any & every Yarn AMRITLAKSHMI is able to offer proven methods of preparing it for the Shuttleless High Speed Looms while continuous improvements, developments & additions of newer & latest instruments Indian or Foreign origin as per the choice of each customer.

Research & Development are inherent in every AMRITLAKSHMI machine, and being tailor-made each machine is different from the other as it is manufactured to suit exactly a particular customer's need & the required technology that goes along with it.

It is a practice at AMRITLAKSHMI to discuss the needs of each Customer thoroughly & especially in case of new project so as to ensure that the combined experience of the AMRITLAKSHMI's Team becomes a valuable input in each & every machine meant for India or Abroad.

Just meet us once and discuss your Weaving Project with us and you will appreciate our involvement to make your project a success. !!!

Amritlakshmi Machine Works
A very vital and unique development was carried out by Amritlakshmi in 2000 by designing and manufacturing indigenously for the first time 7 Point Inverter Driven and PLC Controlled High Speed Sizing Machine Model ULTIMO-EX-VA which had the following multiple features:-

- 20 Beams Vertical Creel with option for Zig Zag/Magazine Creel on wheels.
- High Pressure Pre-Wetting System.
- High Pressure Wet Squeeze Size Box complete with Wet Splitting.
- Linearly Controlled Proportionate Squeezing System.
- 14 Cylinder Drying System including Pre-Dryers.
- Head Stock for Loom Beams upto 3.6 Meter wide with a 1000mm Flange Diameter and complete with AC Inverter Drive controlling motors with Encoders/Load cells etc.

**MULTI CYLINDER SIZING MACHINE .. MODEL ULTIMO EX-VA .... AC SERIES**

**CREEL:**
Zig Zag or Vertical type designed and manufactured from MS Structurals suitably strengthened with MS Tie Rods available from minimum 12 beams to maximum 24 beams.

The Creel Structure is heavy duty without any over hang of beams outside this structure for vibration free working necessary Guide Rolls are provided @ 1 for each pair of Beams to support the yarn right through.

The cast Iron well designed Beam Mounting Brackets housing Bearing Cartridges can be Fixed type or Telescopic ranging from 1400 mm (55") between flanges up to 2286 mm (90") Beams depending on the type of Warp Beams and all brackets support the Warp Beams' side shaft for smooth unwinding of the Warp Beams.

Heavy duty Pneumatic braking arrangement with the help of segmented chain with brake liner with levers and Pneumatic Cylinder per Beam is provided. Optionally Centrally Controlled System for controlling the Braking force is available and which depending on the feed back received from the set tension via the Electro Pneumatic Circuit the Braking Force is altered so as to maintain the set tension.

**UNWINDING TENSION CONTROLLER SYSTEM:**
The Yarn sheet from the Creel passes through a pair of Rollers where one Roller is "dancing" continuously and sensing the running yarn tension and the system will be complete with necessary Electro Pneumatic Valves, Linear Pot and other Automation to control Unwinding Tension with Beam flange diameter 1000 mm.

**LOOM BEAM UNWINDING STAND:**
Beams made on Sectional Warper are Sized by the Beam to Beam Sizing process where instead of a Beam Creel described above the concept of an Adjustable Type Loom Beam Unwinding system is offered which is complete with a Heavy Duty Pneumatic Braking on both sides along with appropriate Loom Beam holding arrangement which has an arrangement to adjust the position of the Beam on the central axis of the Sizing Machine as required.
SIZE BOX:
The heart of the Sizing Machine i.e. the Sow Box comprises of a Mild Steel framing suitably strengthened which supports following:

a) Positive Feed Roller System.
b) Vat (Size Mix Holding tank) plus Overflow/Fresh Size Tank
c) Immersion Roll Arrangement.
d) 2 pairs of Rubber Roll / SS Roll or Rubber / Rubber System
e) Pneumatically Operated Squeezing System with Proportionate Squeezing
f) Size Circulation System
g) Temperature Indicator-cum-Controller.

POSITIVE FEED ROLLER SYSTEM:
The Positive Feed Roller arrangement is provided at the entry of the Size Box and comprises of Hard Chrome plated Feed Roller/Rubber Nip Roller/Ebonite Guide Roller & complete with Pneumatic System. The overfeed percentage can be varied by adjusting the Drive as required and similarly the Nip pressure can also be adjusted by means of an Air Regulator as required.

JACKETED VAT (SIZE HOLDING TANK):
The 316 swg Stainless Steel Vat holds the Size mix and has a middle wall which is actually a partition wall dividing the tank in two sections i.e. Main Size Holding Tank & Size Overflow / Fresh Size Tank, which can be adjusted for required height manually.
The Direct and Indirect Steam Coils ensure uniform heating of the Size Mix in the Main Tank and the Overflow Tank.
The Size Circulation System is efficient and maintains a uniform and constant level of the Size Mix in the Main Tank.
Optionally, Liquid Level Controller will be provided on the Feed Line of Size Material, which will automatically sense and operate the valve for supply of size material.

IMMERSION ROLL ARRANGEMENT:
Rubber Coated Immersion Rollers are made of suitable width with a Motorised / Pneumatic Lowering and Lifting arrangement depending on the depth of sizing as required is provided where the Rubber Rollers press against the Bottom Sizing Rollers during operation to get Wet Squeezing effect in a Controlled manner.
The Size Box is complete with a Control Panel which houses Air Pressure Regulators / Indicators / Push Button Panel for movement of Immersion Rolls, Top Squeeze Rolls, Size Circulation Pumps etc complete with Nylon Tubings, Internal Electric Wiring etc.
The Linear Squeeze Pressure Control is proportionate to the Speed of the machine with the necessary Electro Pneumatic Transducers and Electronic feed back circuits where the maximum and minimum pressures are 4 tonnes to 1.5 tonnes respectively.

PNEUMATICALLY OPERATED SQUEEZING SYSTEM:
2 Nos. Hard Rubber Bottom Size Rollers in each Size Box are provided on which are placed 2 Nos. Rubber Coated Squeezing Rollers (Anti-Deflection Type optionally available) and having suitable shore hardness to obtain desired size pick up. The squeezing rollers are pneumatically operated for getting uniform squeezing pressure.

Amritlakshmi Machine Works
TEMPERATURE INDICATOR-CUM-CONTROLLER:
Temperature Controller is provided in the line of steam supply to the Size Box complete with a sensing Probe which regulates the steam supply to the direct coil so as to maintain the set temperature in the Vat. The additional Direct Steam Heating Coil in the reservoir is provided with a manual valve to control the pre heating of the size solution.

MULTI CYLINDER DRYER
The Cylinders are placed on mild steel fabricated structures suitably strengthened for vibration free working & designed to allow the Yarn Sheet coming from Size Box to each Pre-dryer directly with shortest possible length without any guide, splitting rollers, thereby controlling the stretch to the minimum and any necessity for sensing / monitoring the yarn tension.

SS Cylinder Tested upto 120 PSI:
All Cylinders are of 800 mm diameter & manufactured from 14 gauge 304 quality Stainless Steel Sheets with M.S. reversed dish ends & are completely argon arc welded and Hydraulically Tested upto 7 kg./cm² pressure.
The desired number of Cylinder are Teflon Coated and all Cylinders are mounted on Double Row self-aligning Ball Bearing Housing so designed to allow for Heat Expansion on non driving side only.
Neatly Designed Plumbing of Steam Inlet and Condensate Outlet is provided allowing easy access to both Top and Bottom cylinders. Large float traps are provided to remove condensate efficiently hence avoiding size stickiness on Cylinders or water accumulation inside the Cylinders.
Steam Inlet / Outlet Plumbing to the Rotary Joints is connected by means of Steam hoses for longer life and Rotary Pressure Joints for Steam Inlet / Condensate are of 11/4“ BSP size with Teflon seating is provided for trouble free long life.
Syphons are provided in each cylinder for removal of accumulated condensate through the Rotary Joints and all Cylinders are provided with Hand Wheel Steam Inlet Valve to control flow of steam.

TEMPERATURE INDICATOR CONTROLLER:
Per pair of Cylinders one set of Temperature Indicator Controller System is provided comprising of:
1. Temperature Sensing Probe
2. Sensing Probe Holder
3. Temperature Indicator Controller Unit
4. Pneumatic Solenoid Valve
5. Steam Control Valve with by pass arrangement.

The System works automatically by sensing temperature inside the Cylinder and regulating the “On Off” conditions of Control Valve. The by pass arrangement is provided for manual heating of cylinders during start up.
Oiling & Waxing Device (Optional): For uniform coating at all speeds it is possible for the Roller Drive with the Inverter to be proportionate to the machine speed or it can be independent to vary the coating as required. Heating via Steam or Electrical is provided.

LEASING SECTION:
Depending on the number of Beams in the Creel Mirror Polished SS or MS Hard Chrome plated Lease Rod made from 16 SWG Pipes are provided with each Rod having both end precisely pressed and all Rods are mounted on adjustable Holders on either side.
1 no. hard chrome plated Burst Rod 2” diameter is placed at the exit end of the Dryer after the Waxing / Oiling Device.
WINDING HEADSTOCK:
The Amritlakshmi Headstocks are vibration free and made from Heavy Duty M.S. Structural are available from minimum width 1800 mm (72") up to 3600 mm (141") between flanges and with Flange diameter ranging from 762 mm (30") up to 1400 mm (55") and the Beams are mounted on the arbours which slide Left or Right by means of motorised arrangement as required.

THE HEADSTOCK STRUCTURE HOUSES THE FOLLOWING:
a. Rubber cover Drag Roll (Delivery Roll) on which the Pneumatically operated Nip Rolls are mounted.
b. 1 No. Zig Zag comb with Centering, Expansion and Contraction arrangement.
d. Remote Control Panel with necessary Meters, Switches, Leavers, Regulators, etc. for control of Electrical / Pneumatically operated device.

HYDRAULIC BEAM COMPRESSION DEVICE:
Hydraulically Operated Beam Compression Device is provided at the centre of the Head Stock below the Loom Beam with the help of which compact / hard weavers Beam is obtained as required. The pressing device is complete with the hydraulic system & the pressing trolley is suitable for minimum 1524 mm width between flanges of the Loom Beam & the maximum width permitted will be as per our quotation. 1 Set of Press rollers are provided as per standard.

PNEUMATIC BEAM DOFFING AND DONNING ARRANGEMENT:
Separate Cylinders along with necessary controls, levers and brackets etc. are provided for easy Beam Donning and Doffing.

MIRROR:
A full size mirror approximately 300 mm in width is placed along the width of the Head Stock and above the expansion comb in such a manner that the operator can observe the yarn threads passing through the comb while he is attending/observing other functions of the Sizing Machine.

BEAM ADAPTERS:
One pair of Beam Adapters suitable for the specified Loom beam will be provided.

AUTOMATIC CONTROL OF BEAM WINDING TENSION:
To maintain uniform tension of the warp sheet as the beam diameter increases, torque on the beam arbor is transmitted to the electric panel through a closed loop circuit which automatically changes the speed of winding motor to maintain uniform tension on the yarn sheet while synchronising the speed of the winding motor with the main motor so as to maintain steady linear speed.
AC INVERTER DRIVE COMPLETE WITH PANEL:
AC Motors are provided to drive the machine at the desired speed for varying the speed of the machine instantly and to maintain the yarn sheen tension constantly. The Panel controlling the drive is complete with overload protection, starter, provision for connecting the various control like moisture controls etc.
Motors will be directly coupled to Gear Boxes and the whole Assembly will be directly coupled to the respective driving rollers / shafts for avoiding any backlash.

TENSION CONTROL SYSTEM:
The machine will have Pendulum Roller Arrangement with necessary Electro Pneumatic accessories which will sense, act and give the feed back to the PLC Drive for proper speed and tension synchronisation as required.

TERRY TOWEL PROJECT
Amritlakshmi offers specialized Machines for Warp Preparation to prepare Yarn for Terry Towel Weaving as well as Jute Yarn Weaving.
RANGE OF PRODUCTS

- Direct Warpers with Creel for Spun Yarn (Cotton/Blended, PV, PC) Several Models.
- Multi Cylinder Sizing Machines for Spun Yarn (Cotton/Blended, PV, PC) Several Models to choose from for Standard Applications.
- PLC Controlled 7 Motors INVERTER Driven Double Sow Box Multi Cylinder Sizing Machine for High Speed Shuttle less Looms & varieties of Yarn.
- Warping, Sizing & Beaming Systems either 2 Tier (Creel to Beam System) or 3 Tier (Beam to Beam System) for Continuous Filament Yarn either Zero Twist or Low Twist.
- Mini -Sizing Plant for all types of Filament Yarn.
- Beam to Beam Rewinders for several applications.
- Pre-Beaming Machine (Direct Warping) for Jute Yarn.
- Dressing Machine (Multi-Cylinder Sizing) for Jute Yarn.
- Direct Beamer for Industrial Fabrics/Carpet/Jute/Flex /PP/Nylon Yarn etc.

Amritlakshmi Machine Works
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