



**SEMITRONIK**

**AUTOMATIC FABRIC STRAIGHTENING SYSTEM**

**straitomat**



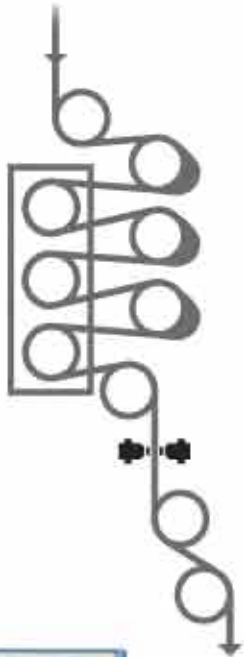
# SEMITRONIK

## straitomat

**AUTOMATIC FABRIC  
STRAIGHTENING SYSTEM**

**FOR WOVEN/KNITTED OPEN  
WIDTH OR TUBULAR FABRIC  
BEDSHEET  
FURNISHING FABRIC  
TO SUIT ANY REQUIREMENT.**

SYSTEMS ARE IN  
OPERATION IN  
INDIA, CHINA, PAKISTAN,  
BANGLADESH, SRI LANKA,  
EGYPT, IRAN, BANGKOK,  
AFRICAN & SOUTH  
AMERICAN COUNTRIES.



### FOR A FABRIC WITH PERFECT WEFT - MUST FOR

#### GARMENT MANUFACTURER

With rejects and finishing pushing up the costs, fabric distortion-however small-is wholly unacceptable today to Garment Manufacturer. Add to this, the failure of manual control on current high-speed Fabric Processing machines and the only solution left is automatic fabric straightening. Straight fabric is achieved not only by straightening at the final process, but at every process stages, as this system today is available at affordable price.

#### TODAY'S STRAITOMAT

The latest version of a Semitronik Fully Automatic Fabric Straightening System, has reached world class standard, owing to continuous breakthrough and application of the latest available technology.

It's high-sensitive, high-responsive scanners ensures correct measurement of the distortion and most importantly, are accurate and rapid straightening. It is highly user-friendly and operation is absolutely reliable even when used on continuous basis.



**AFSM-321**

### FOR THE WIDEST TEXTILE RANGE

Although textiles differ in their look, construction and form, the specific structures formed by warp and weft, knitted course and whales or rows of tufting must always retain their form throughout the entire processing stage. Hence, distortions altering the basic structure must be rectified since deformed fabric has a reduced value and difficult to make-up. Straightening, particularly automatic straightening is therefore an absolute must.

STRAITOMAT, its highly-sensitive scanners pick-up the signals generated by each passing thread. It accurately and uniformly identifies and tracks the basic design structure. And most importantly, the system exactly calculates the distortion without the need of any manual adjustment. Irrespective of the line speed or the surface effects, colour, print or pile of the design, STRAITOMAT's photo-electrical monitoring system reacts to even fractional, angular deviations of the weft line from the specified norms. Even widely different fabrics create no problem since the system automatically and immediately adapts to the new designs. The machine operator needs to do nothing except to switch the system on and forget it.

### MATCHING AUTO-CONTROL AND MACHINE- STRAIGHTENING PERFECTION

Total compatibility between the control system and the associated machine only can ensure their smooth functioning. Without a perfect fit between the two, the working could only be sluggish. STRAITOMAT Fully Automatic Fabric Straightener fits the task appreciably and delivers perfectly straight cloth.

#### Its dominant key features:

- Highly sensitive powered detectors.
- Intelligent signal processing.
- Automatic adapting to any material.
- Automatic light intensity control.
- Informative distortion indication.
- Ultra-fast line speed related response to control signals etc.
- Several helpful optional accessories to meet every particular requirement.
- The straightening system has on y 2.7 m of cloth content, 3 skew and 2 (optional 3) bow rollers controlled by built-in variable speed electrical system.
- Photo-electrical detection by 4-8 scanners (Rotating type) and associated projectors.
- Tension reduction by electronic servo control drive of bow rollers and a tacho-generator to prove a reference of line-speed is an important component for straightening knitted fabrics.
- A very special feature of the straightening system is its anti-creasing design.
- The bow rollers are perfectly arranged against any fabric creasing tendency. Their efficiency is governed by the bow rollers position.
- STRAITOMAT straighteners comply with the very high safety standards required by EEC directives, when they are equipped with safety doors (optional).
- The systems are supplied ready for connection to a mains supply and are compact to fit the limited space, available in the finishing line.



## FABRIC STRAIGHTENING PRINCIPLE AND CAPACITY

The system straightens fabric by lengthening the distance covered by the center or extremities of the fabric.

**But note for successful straightening, fabrics require a minimum back tension of 20-60 N.** If the fabric is narrower than the rated width of the fabric straightening machine, the reduction in the roller coverage will reduce the machine's capacity to straighten. Half actual fabric width means 1/2 skew and 1/4 bow straightening effect.

## INSTALLATION OF STRAITOMAT

- In front of stenters and other driers.
  - At the exit end of stenters.\*\*
  - Inside the entry of stenters, i.e. between the entry frames of the stenter where skew and bow rollers are placed to provide the shortest possible route between the straightener and stenter chain, particularly for light weight knitted fabric.
  - Directly behind rope openers.
  - Ahead of calenders, laminating and coating ranges.
  - On printing ranges in ever increasing number of installation.
- \*\* For distortions including those formed during the fabric passage through the dryer, straightening to a very fine tolerance level is done by controlling:
- A draw roller and individual motors' chain speed.
  - Draw rollers can be substituted by breathing or expander rollers with automatically varying shape and diameter.
  - Bow roll with oscillating assembly with two motors and electronics system Model AFSM-321 DUAL does the correction of skew and bow distortion automatically to ensure residual distortion to international standard at entry and delivery end of stenter machine.
- Compressive shrinkage range.

## THE RIGHT SCANNER ASSEMBLY FOR THE RIGHT JOB STRAITOMAT SCANNERS

Must be able to monitor the weft line just after it has left the straightening device, so that they immediately register the correction.



AFS-321

The number of scanners is governed by the width of the widest fabrics and the distortion nature. 6 scanners are standard. **Few scanners are required if the weft is uniformly skewed or bowed** than it were twisted into an irregular, wavy configuration. Generally more the scanners are provided, more accurate the results will be i.e. the correct weft line. At the stenter outlet, where the fabric is fully tendered and is perhaps only slightly distorted, 4 scanners are normally sufficient. More scanners may be fitted to supply more information to the system.

## TRANSMITTED OR REFLECTED LIGHT FOR FLEXIBLE DETECTION

If your textiles barely allows light to pass, or if the surface structure has the distinguishable characteristics such as corduroy, reflected light can produce clearer signals than light through the material. The system is with a built-in infra-red light source, which can be switched on as an alternative to the standard projector lamps.

## STRAITOMAT BRIDGES

The standard H-bridge is largely used in association with the straightening systems but with sufficient space, can also fit at delivery end of stenter. It is provided with guide rollers and a tacho-generator and can accommodate 4-8 scanners and projectors.

The compact bridge has been designed for use in association with entry frame course straighteners, it can be used as an alternative. Like the standard one, it can take 4-8 scanners and projectors.

## CONSTRUCTION OF THE DETECTION AND CONTROL SYSTEM

The system consists of:

- The electronic cabinet contains the control system, which is the nerve center with complete circuitry on plug-in type PCBs for power supply, scanners' signal evaluation, light projectors' supply and 4 controllers, 2 each for automatic skew and bow operation of fabric straighteners.
- 4-8 nos. of scanners (**Rotating type with built-in reflex illumination**) with projectors. Each projector has a light source with a bulb of 12V / 20W.
- Operation section with luminous push buttons for ON/OFF and MANUAL/AUTO operation of the system as well as impulse indicators for indication of the position of the skew and bow rollers.



AFS-321



## WEFT CONTROL SYSTEMS

There are various ways of straightening draw weft. Some methods have proved to be ideal for certain kinds of fabric and at key points on the processing line, but all can be automated with STRAITOMAT. The highly sophisticated automatic straightening system with conventional skew and bow straighteners' or the exiting straightener will correct even severely distorted weft to almost zero level, which nowadays is an absolute necessity.

### DIFFERENT STRAITOMAT VERSION

#### MODEL AFSM-321 WITH SCANNERS

Complete automatic straightening machine, suitable for all types of woven and knitted fabrics. It features rotating slit sensor with universal detectability, this system is ready for erection.

The system is controlled by function keys, push-buttons and switches.

Selection of operation of numbers of weft scanners, projectors, manual control of skew & bow rolls, operation of tension control and scroll rolls and facilitate input and history of fabric under process related data such as sort no., date of process, etc. The three horizontal bands on the main display represents the momentary lie of the weft.

The histogram on the lower half of the display reflect the trend of any residual skew & bow distortion over a one hour period.

#### MODEL AFS-321

To be attached to existing manually operated straighteners. Correction can be effected to any type of fabric straightening machine, provided that it is equipped with adequate motor drive or hydraulic correction system capable enough to correct fabric distortion to the required extent.

This STRAITOMAT model is provided with 2 controllers, one of them being actuating the bow straightener and other one the skew straightener. The display instrument indicates that the correction lie of the weft has been re-established.

#### MODEL AFSR-421

For very low amount of distortion, a system consisting of a straightening machine with weft scanner assembly and single bow roll assembly on oscillating frame with two motor with variable speed for correction of skew & bow distortion at the delivery end of stenter or printing machine or compressive shrinkage range machines. The system with total of 2/4 scanners, can be used.

#### MODEL AFSM-321 DUAL

The System MODEL AFSM-321 combined with System MODEL AFSR-421 can be used on entry of stenter and delivery end of stenter to correct distortion on entry of stenter and residual distortions generated during stenter passage. The combined system with total upto 12/16 scanners can be used. As both entry and exit systems are governed by a single electronic set, the cost is less than a case with two separate systems.

#### MODEL AST-521

This is the type to be attached to compactor or calender used for processing hosiery/knitted, tubular fabric to eliminate fabric distortion in running fabric provided that it is equipped with adequate inverter motor drives to vary the RPM/speed of selvages and center portion to correct fabric distortion to required extent automatically or manually.

This model is provided with 2 controllers to be synchronized with inverter to vary RPM of the motor to increase or decrease surface speed of two selvages and center for automatic correction of Skew & Bow fabric distortion. The display instruments indicate the correct lie of the course.

#### HEAVY DUTY DESIGN

The straightener is available with roller diameters of 100 mm (standard) upto a fabric width of 2400 mm. Beyond this width the design is more sturdy. "Heavy Duty Design" and roller diameters are 125 mm. This model is AFSM-321 HD. For fabric subjected to a high degree of back-tension or whose characteristics demand larger diameter rollers. Heavy duty models are available also in size upto below 5000 mm.

The automatic control system of all types of STRAITOMATs is highly reliable and satisfies the requirement for the practical operation.

#### OPTIONAL ARRANGEMENTS AND ACCESSORIES

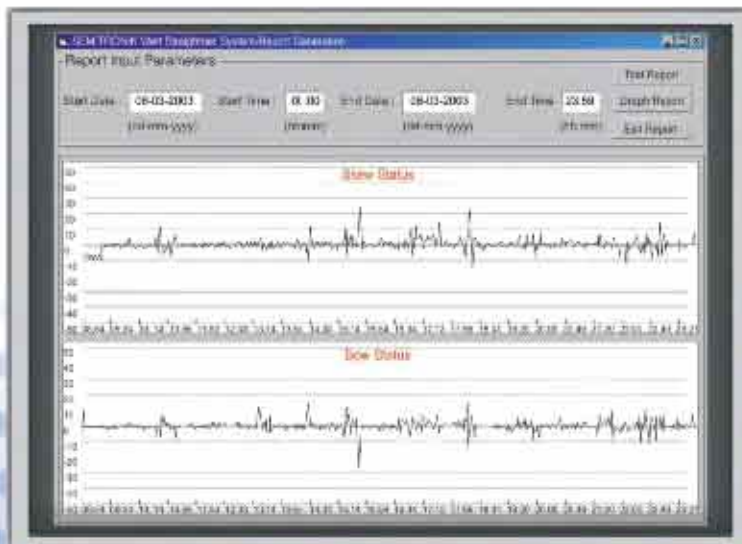
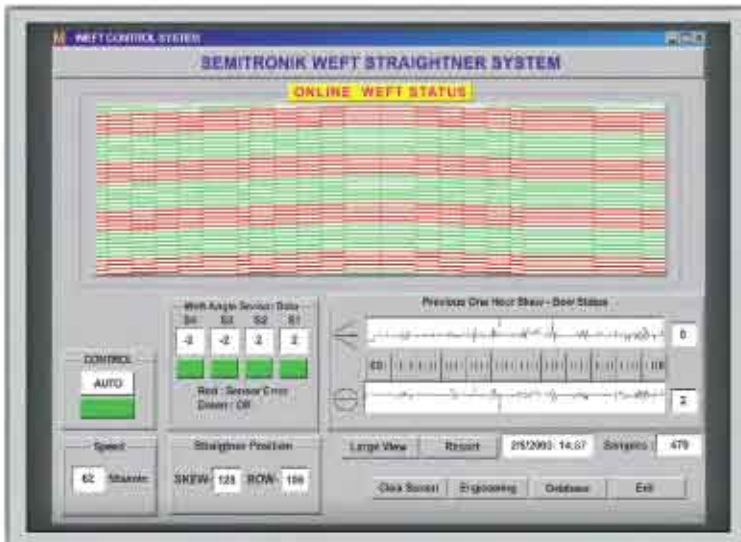
##### 1. DISTORTION PRESET ARRANGEMENT

With this, the operator can program the straightener to give the desired fabric distortion to the weft, setting right the bow distortion resulting from residual shrinkage during drying. It can also offset any unusual structure features of certain fabrics.

##### 2. WEFT SCANNER ISOLATION

For a narrow width fabric, the scanners at the extreme ends of the straightener are not used and hence must be isolated.

For this, an optional weft scanner isolating selector switch is provided.





### 3. DATA LOGGER

A data logger can be connected providing a printed document record at a variable or selected interval showing the meters of fabric straightened to within selective grades of weft line tolerance. It can also deliver coupled documents of batch related statistics.

### 4. TENSION CONTROLLER

Provides a degree of traction to help sensitive fabrics ensuring a constant tension throughout the straightener. Designed with dancer-roller or tachogenerator integrated into the straightening machine.

### 5. MOTOR-DRIVEN SCROLL ROLL(S)

#### ○ IN THE SCANNING AREA

#### ○ AT INLET OF STRAIGHTENER

Helps in spreading fabrics which might have crease or curl at the edges. The scroll roller is motor driven, fitted to the inlet end of the straightener with a facility for variable wrap-around.

### 6. ADDITIONAL BOW ROLLER

Standard system is with 2 bow rollers. A 3rd bow roller increases bow straightening capacity by 30%.

### 7. FABRIC CENTERING SYSTEM

Feeds the off-center webs in the middle of the machine. It's a Infra-red light controlled device.

### 8. CENTRALIZER ASSEMBLY

Helps the straighteners lateral displacement in front of a printing machine. It pneumatically controlled with push button or photo-electrical selvedge guiders.

### 9. SUPPORTING FRAMES

For the attachment of guiders above the straightener.

### 10. MOUNTING FRAMES

Support the straightener above floor level.

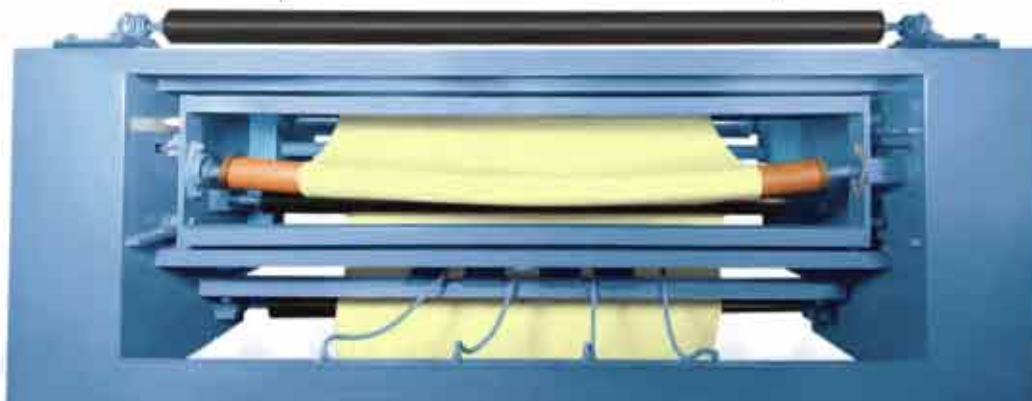
### 11. EXTRA INLET ROLLER

Diverts the path of a fabric coming from below the machine.

## SPECIAL FEATURES AT A GLANCE

- STRAITOMAT is a matching straightening system for maximum response speed, crease-free fabric passage and the shortest dead times.
- Regardless of the fabric running speed, it delivers perfect operation for speeds ranging from 10 to 250 m/minute.
- It is an all-purpose system for automatic control of straighteners, draw-rollers and differential or multi-motor driven chains.
- Works successfully, irrespective of the nature, colour or finish of the fabric.
- Movement of the straightening rollers from one limit to other limit takes a minimum of 12 seconds only.
- Correction range for standard straighteners with 3 skew and 2 bow rolls covers some +/- 600 mm for skew and +/- 400 mm for bow, while heavy duty straightener can move material by +/- 550 mm.
- Available with 3 skew & 2 or 3 bow rolls.
- Tension-controlled positive drive to bow rolls for knitted or particularly sensitive fabric.
- Fabric can be tested and recommendation can be given regarding scanner type and accessories or options for your exact fabric need.

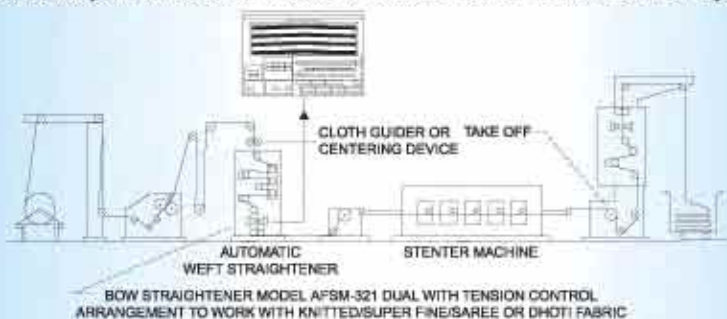
- For improved detectability of particular fabrics, positive scroll roll feature for entry of the scanning area.
- Safety doors on front and back, as per the European standard, for the straighteners with an automatic switch-off in case of improper door locking.
- STRAITOMAT removes the detected distortion at the outlet of a stenter which are created by drier-induced shrinkage, without recourse to any manual intervention.
- Cloth content:
  - Length from first correction roller to scanner 2.0 meters (standard), 2.5 meters (heavy duty).
- Rollers:
  - Effective roller length* 1000-3200 mm
  - Straight rollers* High-grade stainless steel/ebonite
  - Bow rolls* Durable rubber or hypalon covering
  - Standard roller diameter* 100 mm
  - Heavy-duty roller diameter* 125 mm
- Speed:
  - Maximum permissible line speed at a fabric width of 1600 mm is 250 m/min.
- Tension:
  - Maximum permissible back tension (with tension control) at a fabric width of 1600 mm, 400 N, with maximum of 1000 N (without tension control) at a line speed of 50 m/min.



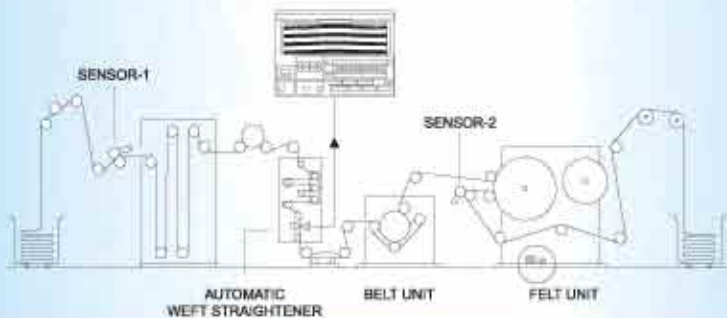
AFSM-321-D



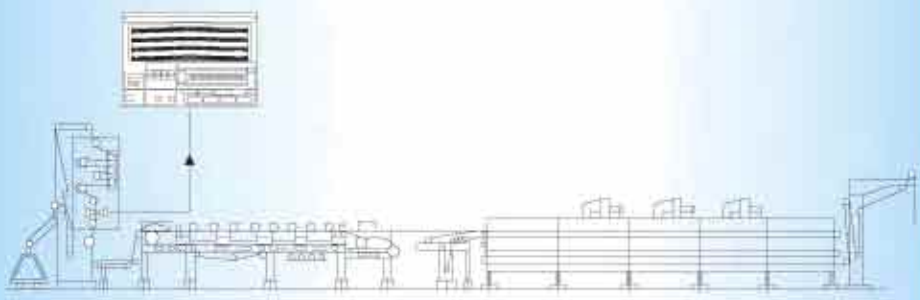
Installation details of Automatic Fabric/Weft Straightening System STRAITOMAT Model AFSM-321 Dual on entry and delivery end of the Stenter Machine for Woven/Knitted/Scarf/Saree & Dhoti or any type fabric



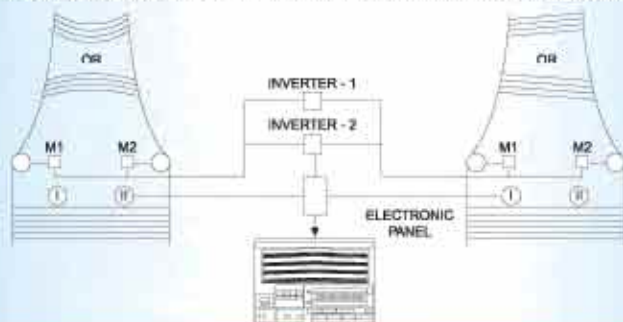
Installation details of Automatic Fabric/Weft Straightening System STRAITOMAT Model AFSM-321 on Compressive Shrinkage Range Machine or Sanforise Machine or Zero Zero Machine.



Installation details of Automatic Fabric/Weft Straightening System STRAITOMAT Model AF-SM-321 on Rotary Printing Machine



Installation details of Automatic Fabric Straightening Device STRAITOMAT Model AST-521 for Hosiery/Tubular Fabric on Compactor or Calender Machine for Automatic Correction of Skew and Bow distortions



## SEMITRONIK SYSTEMS FOR ECONOMICAL AND ENERGY EFFECTIVE OPERATIONS OF STENTER MACHINE

- FABRIC CENTERING AND SPREADING SYSTEM
- FABRIC INFEEDE DEVICE SYSTEM  
With rack and pinion with servo motor with infra-red CCD Fabric Edge Sensor for stenter machine for feeding fabric for uniform pinning at any speed and any coloured fabric.
- EXHAUST AIR MOISTURE % INDICATOR AND CONTROLLER  
For optimum evaporation efficiency for drying.
- RESIDUAL MOISTURE % INDICATOR AND AUTOMATIC CONTROLLER  
Suitable for any fabric for optimum production.
- FABRIC WIDTH (NON-CONTACT TYPE) INDICATOR AND CONTROLLER  
For open width & tubular compactor & stenter and compressive shrinkage range machine.
- CENTRALIZED PROCESS CONTROL SYSTEM FOR PROCESSING MACHINE  
Microprocessor to monitor & control:
  - Width
  - % of over/underfeed
  - Running speed
  - Fabric tension
  - Selvage tension, etc. etc.
- OXYGEN % INDICATOR/CONTROLLER  
For boiler for economical & energy effective operation.
- DIGITAL TEMPERATURE INDICATOR/CONTROLLER  
With control valve with on/off/proportionate/PID control characteristic with platinum resistance bulb to measure temperature.
- TEMPERATURE PROGRAMMER  
For semi/fully automatic operation of dyeing machines (Different models are available).  
With facility for:
  - Programmable progressive, regressive & linear dosing.
  - Anti entanglement detection & correction device for single as well as multi rope overflow or jet dyeing machine.
- DYEING DATA MANAGEMENT SOFTWARE PACKAGE  
For single or group of dyeing machine of any make & type with any make Temperature Programmer to have lot history of each lot dyed on each dyeing machine.
- LOOM DATA MONITOR WITH DATA MANAGEMENT SOFTWARE PACKAGE  
For loom or group of looms of any make & type to have information such as RPM, production per shift & efficiency etc (or can supply as per specific requirement) of each loom to eliminate human error and labour.

For further details, contact

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