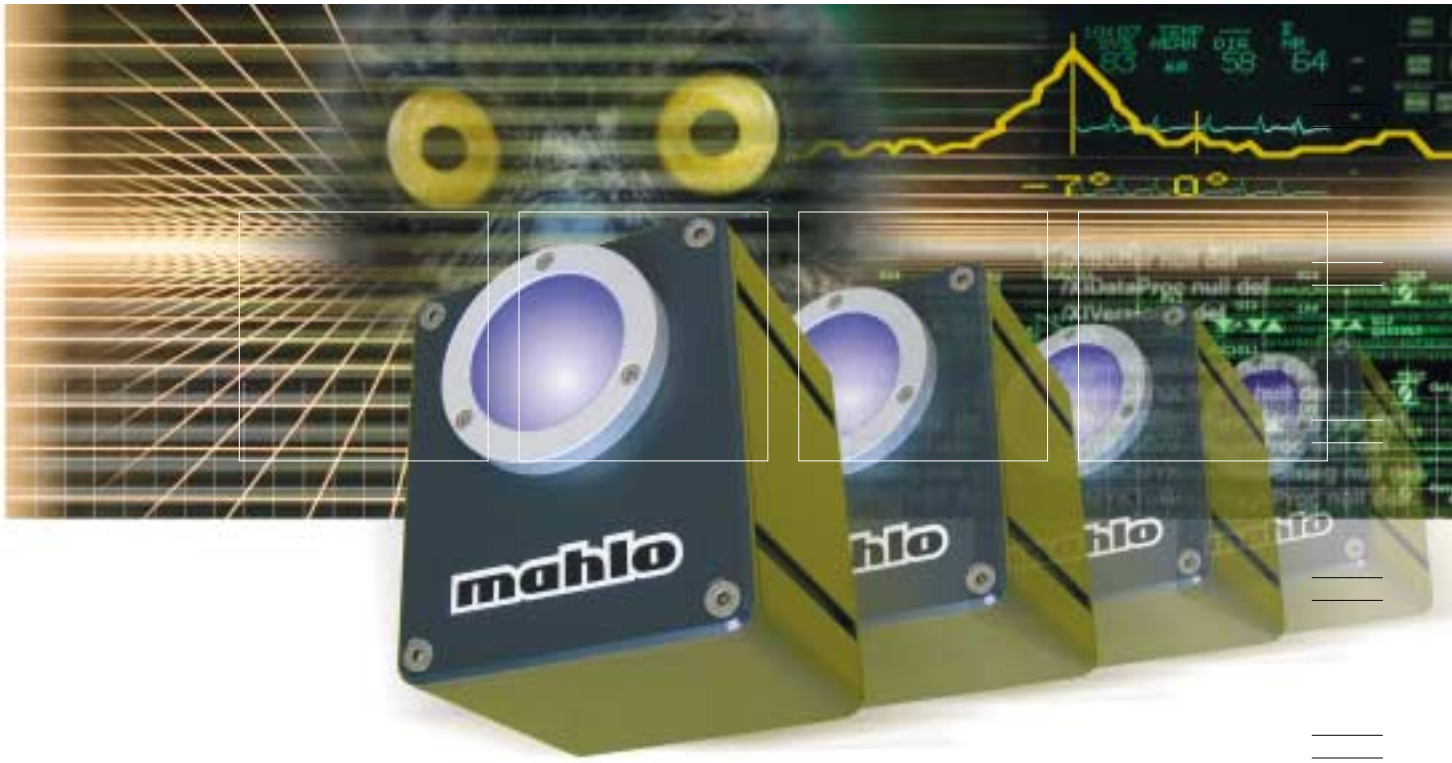
mahlo

trendsetting technology. worldwide.



ORTHOMAT FMC-12

Realigns distorted weft automatically

Measurement

Control

Automation

ORTHOMAT (R)FMC-fully automatic detection of bow and skew

The best way in the world to realign distorted fabric

Process-induced bow and skew alter the basic structure of textile materials. Deformed cloth looses its value as a usable commodity, is difficult to make up, and invites complaints. An Orthomat detects and straightens distorted weft or knitted courses. Its optical sensing system is not put off by the variety of colours, printed and jacquard patterns, or surface textures such as pile or loops.
An Orthomat picks out and analyses the underlying, regular structure of the material's weft, knitted or tufted courses and, if required, determines pick and course density at the same time.

The new way of measuring bow and skew

A number of scanners and lamps are spaced evenly across the online material. The cloth runs between the sensors and lamps, and each pick or knitted course modulates the intensity of the light measured by the scanners. The repetitive nature of the passing picks or courses create a regular light-dark pattern, which generates a modulated signal in the scanner's receiver system. A centrally-pivoted, cylindrical lens in the scanner oscillates to a specific angle in relation to the passing picks. When the lens is parallel with the pick or course, signal modulation is at its maximum. It then decreases as the oscillating lens progressively cuts across the weft line. Unwanted signals that differ from the frequency of the picks, knitted courses or rows of tufts are filtered out digitally, so that the system can analyse the pure bow and skew-related signals and, from those, automatically compute the weft or course configuration.

New features:

- redesigned, optimized optics with improved contrast and depth of focus
- new motor and mechanism affording utmost accuracy
- signals processed precisely and instantaneously and define in less than no time the angle of distortion and pick density, even at high line-speeds
- simultaneous indication of pick or knitted-course count

LED technology

By using a lamp with infrared LEDs, the light shining onto each scanner can be controlled automatically and individually. The new lamps have a much longer working life, and consume far less energy than conventional ones, two further attributes of the new technology.

Transmitted or reflected light

If certain materials barely allow light to shine through them, or their surface texture has distinguishable characteristics, better results can be obtained using reflected rather than transmitted light. The scanners therefore feature a built-in infrared light source, which can be switched on in place of the standard lamps.

mahlo
trendsetting technology. worldwide.

Automatic weft control system Orthomat FMC-12

An all-purpose system for automatic control of diverse straighteners, draw-rollers, and differentially or multi-motor driven stenter chains. It can be installed at the feed and delivery end of a stenter, and features a digital scanning system, microprocessor, touch-screen colour monitor, and adapts itself automatically to a wide variety of fabrics.

When coupled to a device such as an independently driven draw-roller, an FMC-12 Orthomat can automatically realign slightly distorted material or shrinkage-induced bow at the delivery end of a stenter, without any operator intervention. The same system can also be used to automate a variety of mechanical on-site straightening machines.
Apart from the machine and its optional extras, an FMC-12 Orthomat's component parts are identical to those of an RFMC-12.

They comprise:
- 2 - 8 scanners
  and associated lamps, built into a compact assembly. Each scanner is positioned laterally by motorized drive, and follows automatically any variations in cloth width.

- Electronic panel
- Touch-screen monitor
  featuring clearly-defined weftline graphics and histograms and including all control functions.

Host computer interface to help link the FMC-12 to a process-control system (optional), and featuring Ethernet technology and TCP/IP protocol.

The right scanner assembly for every location

The T-assembly is mainly used in conjunction with straightening machines, but, given adequate space, it can also be installed under the draw-roller at the delivery end of a stenter. It is supplied with a built-in tachogenerator and guide rollers, and accommodates 2 - 8 automatically spaced scanners and lamps.

The EP-assembly fits snugly between the overfeed frames of a stenter, where it can control for example a knitted course straightener. It can be used in place of a T-assembly when space is at a premium. Lt, too, accommodates 2 - 8 automatically spaced scanners and lamps.

The right number of scanners

The scanners must be able to monitor the weft-line just after the cloth has left the straightening device, so that they can see immediately the effectiveness of the process, and react accordingly. The number of scanners is governed by the width of the users various qualities and the nature of the distortions. If the weft is uniformly skewed or bowed, fewer scanners will be required than if it were twisted into an irregular, wavy configuration. At the delivery end of a stenter, where the cloth is stretched tight and is perhaps only slightly distorted, four scanners will usually suffice. The more scanners there are, however, the better they will accurately reflect the lie of the weft. This applies to both ends of a stenter, and other applications, too.

The electronic concept

Via a microcontroller, an industrial PC communicates with the scanners and straightening roller mechanisms. The PC can be networked with a host computer and, when linked to a weft-line data logger, can issue quality-related documentation. By exploiting Ethernet technology, the cost of wiring the entire system has been reduced to an absolute minimum. Via a modem, a link can be set up to Mahlo's service department.

The different types at a glance
(You will find detailed information in the insert!)

Type	Function	Application
Orthomat FMC	detects bow and skew	logging residual distortion, controlling a draw roller or automatic/manual straightener
Orthomat RFMC	corrects bow and skew	high-end, stenter, feed-end system for all interlaced materials; very user-friendly
Orthomat MFRC/DRFC	fine realignment of minor residual distortions fine realignment of crease-prone material	fine tune straightening at the back end of a stenter, and on printing machines and sanforizers compact system for correcting moderate distortions
Orthomat GRFMC	corrects bow and skew	heavy-duty type for denim, industrial fabrics, carpeting; high degree of tractive force
Orthopac (G)RVMC	corrects bow and skew and controls processes	budget-priced linkup of (G)RFMC and VMC
Orthopac (G)REMC	ditto	ditto … EMC
Combi-system	fine and coarse correction of bow and skew, option of link with process control	in various combinations, satisfies the most stringent requirements

Technical data

Orthomat FMC-12

1. Signal generation	Photoelectric sensors with oscillating lens. 2-16 scanners
2. Signal processing	Digital signal processor DSP in each scanner. Signals from scanners processed by micro-controller, and imaged by touch-screen PC
3. Auto-control	Software PID control; line-speed related, independent control of bow and skew rolls.
4. Display	Colour monitor with switchable displays: histograms and percentage data. Various service displays
5. Controls	Touch Screen

mahlo
trendsetting technology. worldwide.




Touch Screen – Display and controls in one.

- Percentage of preset bias, variable (left: skew, right: bow)
- Direction of cloth flow and momentary lie of the weft
- Momentary distortion in percent (left: skew, right: bow)
- Histogram, freely scalable in % eg. -5...0...+5 (upper: skew lead, lower: skew lag)
- Histogram (upper: bow lead, lower: bow lag)

Automatic operation

With the new Orthomat, an automatically controlled system, which detects the majority of textile fabrics without the operator having to intervene in any way manually, has materialized for the very first time.

This display will keep you well informed. Always.

The sensors' ability to measure precisely and proportionally the angle of the weft or course enables an FMC-12 weft-control system, or an RFMC-12 straightener to reproduce on screen a true and informative indication of the weft configuration. The three bright bars across the upper half of the screen of an Orthomat reflect the momentary lie of the weft as seen by the scanners. At high line-speeds, when the machine operator can no longer distinguish the pick or course line, a quick glance at the screen will tell him all he needs to know. He can even read the momentary degree of both bow and skew as a percentage. Freely scalable histograms on the lower half of the screen display provide information on the percentage trend of any bow and skew over a preprogrammable period of time.

A split combi display enables the observer to monitor two weft-control systems at the same time.
The left half indicates, for example, any distortions at the stenter feed-end, and the right half, any at the delivery end.

The split screen also registers any set percentage of preset bias. The new user-friendly prompts and touch-screen technology dispense with the need for push-button controls. The screen acts as a direct interface between user and straightening system.

All service settings are menu driven.

①

②

③

④

mahlo
trendsetting technology. worldwide.

Overall management of Mahlo GmbH + Co. KG
and all subsidiary companies:
Robert Daul Dipl.-Ing. (FH)

Mahlo GmbH + Co. KG
Donaustr. 12, 93342 Saal/Donau, Germany
Tel.: +49-94 41-601-0; Fax: +49-94 41-601-102
Internet: http://www.mahlo.com
e-mail: info@mahlo.com

Mahlo America Inc.
P.O. Box 2825, Spartanburg, S.C. 29304, USA
Tel.: +1-864-576-62 88; Fax: +1-864-576-00 09
e-mail: mahlo.usa@mahlo.com

Mahlo Ouest S.P.R.L.
Chemin du Duc 9, 4840 Welkenraedt, Belgium
Tel.: +32-87-59-69-00; Fax: +32-87-59-69-09
e-mail: mahlo.ouest@mahlo.com

Mahlo Italia S.R.L.
Via Fiume 62, 21020 Daverio, Italy
Tel.: +39-03 32-94 95 58; Fax: +39-03 32-94 85 86
e-mail: mahlo.italia@mahlo.com

Mahlo España Sistemas de Regulaciòn y Control S.L.
Calle Antoni Falguera, 21
E-08181 - Sentmenat (Barcelona), Spain
Tel.: +34-93-715-37 01; Fax: +34-93-715-37 02
e-mail: mahlo.espana@mahlo.com

Mahlo Asia Ltd.
764 Thedsaban Nimit Nua Road, Soi 24, Prachanivete 1,
Ladyaw, Chatuchak, 10900 Bangkok, Thailand
Tel.: +66-2-954-48 83; Fax: +66-2-954-42 56
e-mail: mahlo.asia@mahlo.com

We safeguard quality

With over 40 service centres around the world, we guarantee a prompt response to calls for service, and delivery of spare parts within 24 hours.
A new, remote-diagnostics system enables our technicians to access, via telephone, the software in our customers' systems, and make any necessary adjustments, or resolve problems promptly.

Mahlo-service – we are very near at hand should you need us!

ORTHOMAT FMC-12 – 84-000475 – en
Subject to change without notice!