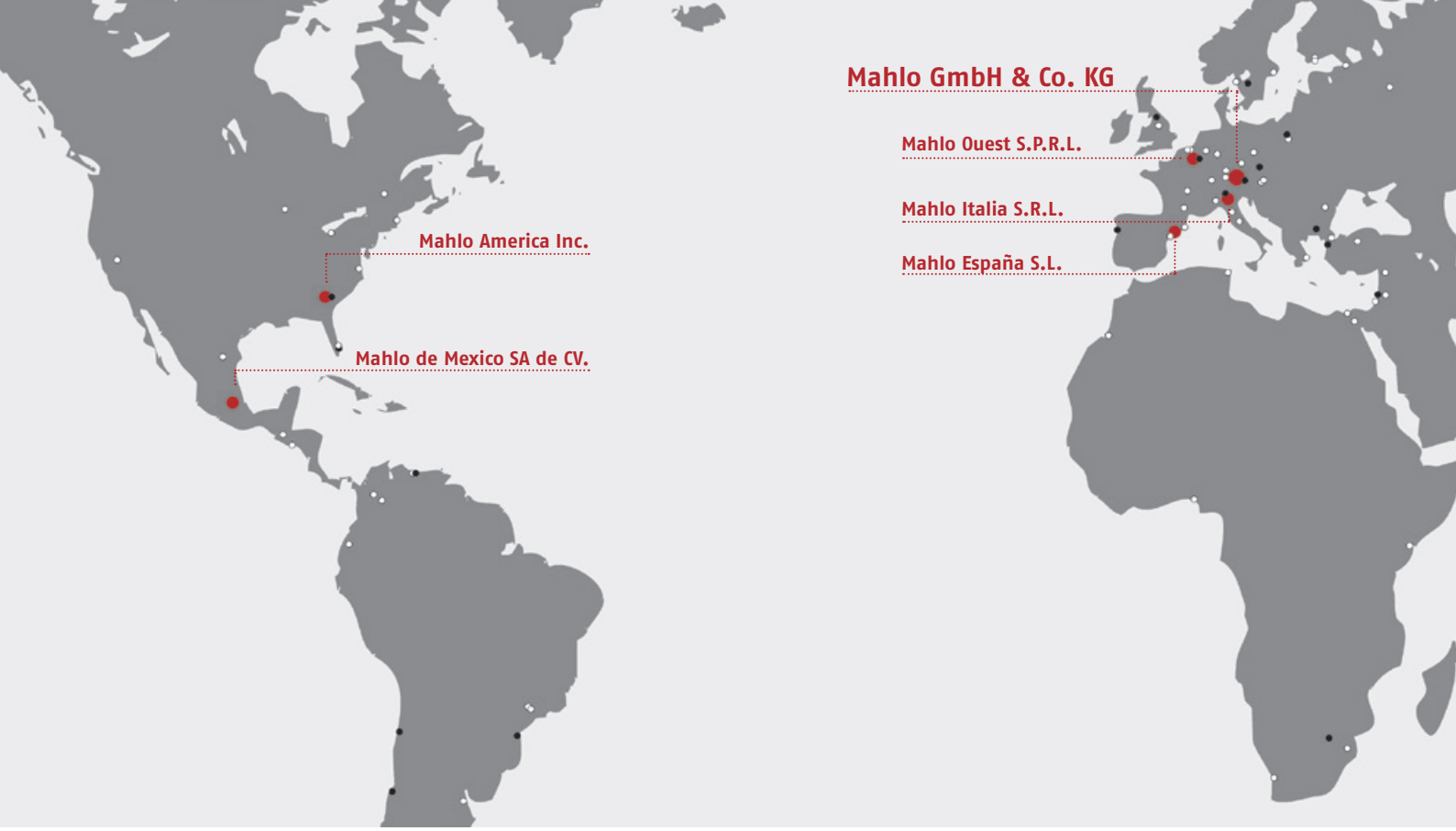
mahlo
trendsetting technology. worldwide.

PRODUCT OVERVIEW

Solutions from Mahlo

PRODUCT OVERVIEW

Quality made
in Germany



Dear Customer,

We at Mahlo® view ourselves in the tradition of a progressive, medium-sized family-owned company with an authoritative presence in world markets with

- ✓ research and development of innovative products
- ✓ concept and execution
- ✓ technically sophisticated and economic solutions
- ✓ efficient after-sales service close to the customer

The aim of our broad market orientation is to achieve the highest possible level of customer satisfaction. Mahlo® relies on a qualified and motivated staff with comprehensive personal responsibility and a simple operational and organizational structure. Mahlo® strives to maintain a suitable balance between:

- ✓ Quality and costs
- ✓ Expenses and benefits
- ✓ High demands and competitiveness

Special solutions

Precision and reliability – Highest quality products through automation and monitoring! This results in cost reduction and efficiency in production. The Mahlo® system components are expandable at any time in the future and thus offer future-proof expansion capability, at reasonable investment costs. Mahlo® develops products today for

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the demands of tomorrow. Your advantage in competition, through innovative, future-oriented technologies in combination with financial benefits, is our main goal. Our actions are guided by the combination of applied practical approaches and the always up-to-date knowledge of available and emerging technological advances.

Philosophy

Our corporate success comes from the perfect interaction between our **customers**, the Mahlo® **products**, and our **people**, who are keenly familiar with our customers' needs. This interaction leads to the desired ... you now what... while our competition philosophizes about such things, we're busy simply solving your problems.

Your success is our philosophy – it's as simple as that!

Mahlo® International:
Mahlo® in close proximity to our customers, with,
5 subsidiaries,
97 representatives and
48 service locations.

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TEXTILE NONWOVEN PAPER PLASTIC

OVERVIEW

OVERVIEW IN TABULAR FORMAT

Skew detection / Skew correction

Process control systems and process monitoring

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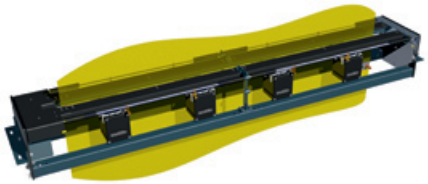
TEXTILE NONWOVEN PAPER PLASTIC

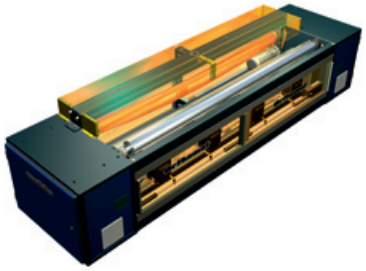
SKEW DETECTION/ SKEW CORRECTION

The Orthomat automatic straightening system

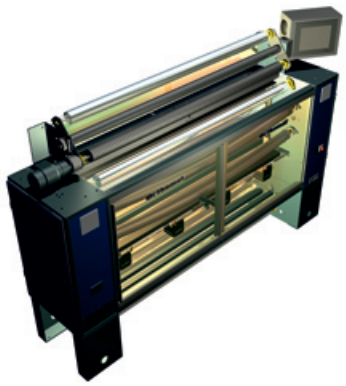
The Orthomat RFMC straightens all kinds of skew problems. A reinforced version is available for straightening heavy and very wide products (e.g. carpet). Even residual distortions are rarely tolerated today in the textile field. Rework and complaints cost money. Manual operation of the straightening equipment is practically impossible with fast-running finishing machines. The answer: Straight threaded product using fully automatic skew correction!



+ Orthomat FMC-12 – Skew detection
The Orthomat FMC automatic straightener is the heart and core of the Orthomat. It consists of an optical scanning system and electronic control for skew correction. The automatic straightener can also be connected to existing straightening machines. In addition, it has the capability of determining the thread density.



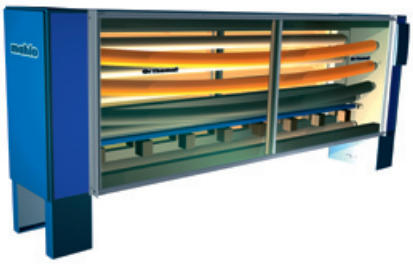
+ Orthomat MFRC/DFRC-12 – Fine straightener
The Orthomat MFRC/DFRC straightening module for fine correction. The compact straightening module with dual-function straightening roller corrects minor bow and skewed drafts, such as on the stenter delivery or before the printing machine. Another model consists of two dual-function straightening rollers with increased straightening capacity.



+ Orthomat RFMC-12 – Standard straightener
The classic straightening unit but with the most modern technology. The "intelligent" scanning system together with a precise straightening unit detects and eliminates skewing at high speed.

+ Orthomat XRFMC-12 – Precision straightener
Controlling and regulating at the same time: The Orthomat XRFMC is the first straightening system which offers this unique combination. This completely new concept was developed for processing high-value textiles with the greatest distortion dynamics. The independently controllable straightening rollers guarantee the greatest possible control of the straightening process and easily hold even the tightest residual skew tolerances.

+ Orthomat GRFMC-12 – Heavy duty straightener
The heavy duty version. High demands caused by large product widths (e.g. carpet) or dimension-stable textiles with defined skew settings (e.g. denim) require a reinforced configuration. The frame, bearings and rollers are designed for higher pressures. Available with up to 5500 mm working width.



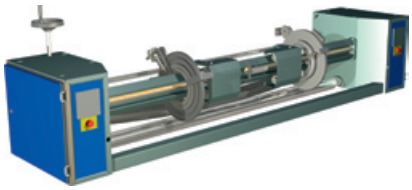
+ Combi systems
Confronted with the most stringent demands with respect to any residual distortion, in many cases it is necessary to develop very special straightening concepts. Mahlo® has responded to these demands and developed individualized solutions. This is necessary since in many cases straightening before the stenter is not sufficient. Distortion, especially bow, can still occur in the stenter itself. This is why the weft configuration is sensed by scanning after the stenter pull-off roller. Distortion is actively controlled by means of the speed controller of the pull-off roller and with the combined skew/bow roller of the Orthomat MFRC straightener.

+ Options
To offer these custom-focused concept solutions, the Mahlo® range provides a variety of options.

Modular straightening and process control system

+ Orthopac RVMC-12 – Modular process control system
The Orthopac RVMC combines the functionality of the Orthomat RFMC straightener with the Optipac VMC process control system in one package. The base modules provide significant cost savings with the same functionality.

Pin wheel straightening system

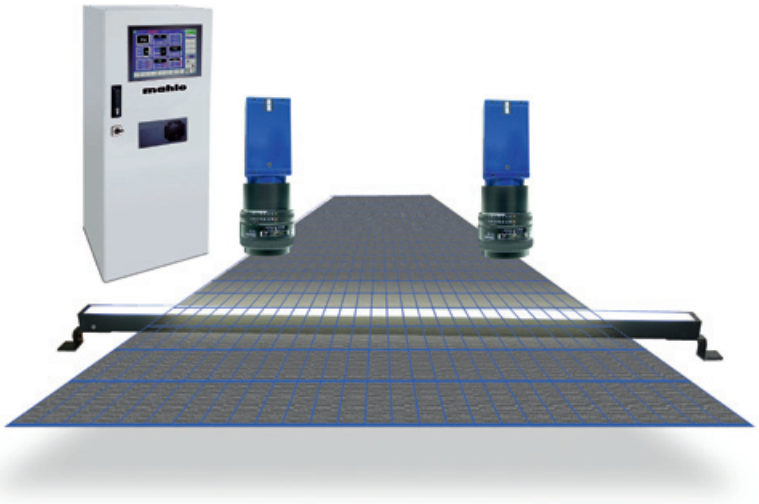


+ Orthofact MMB-12 – Skew correction
Asymmetrical distortions (waves, S-shaped, etc.) in textiles have always represented an enormous challenge to the textile industry. Particularly when there is no way to combine the straightening function with a stenter (e.g. before decatizers, digital printing systems, etc.) a special straightening approach is needed. To restore the warp and weft threads to their original state, the Orthofact MMB-12 generates a defined lateral tension using freewheeling, inclined pin wheels. This cross-tension stretches the warp threads. The resultant force controls the freewheeling pin wheels, since the weft threads will always seek out the shortest path from selvedge to selvedge. The distortion, no matter what the shape, will be corrected.

Pattern detection

+ Pattern Control System PCS-12 – Pattern detection, skew correction, pattern repeat control

The leading pattern detection system using camera technology. The repetitions of printed, woven or tufted patterns are evaluated according to certain algorithms and are used for measuring, correcting and evaluating distortions and patterns. The system uses one or two cameras, depending on the width of the product, to detect the position of the pattern and automatically and continuously determine the pattern repeat, as well as the product width, and together with a straightening machine align the product distortion based on the recognized pattern.



FIRST AID

You can count on our service team, especially when "first-aid" is required. A call is all it takes to get our technicians on-site. Around the clock – and around the globe. So that you can concentrate on your work without having to worry.

Online-Support:
SERVICE@MAHLO.COM

Support-Hotline:
+49-(0)180-50 62 456

TEXTILE NONWOVEN PAPER PLASTIC

PROCESS CONTROL SYSTEMS AND PROCESS MONITORING

Productivity, cost efficiency, resource allocation, consistent and repeatable quality even with short lead times, all these determine your competitiveness like never before. Mahlo® **offers a comprehensive product spectrum for monitoring and optimizing production processes.**

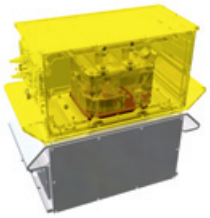
Optipac VMC-12 – Modular process control system

This modularly designed process control system, intended mainly for monitoring stenter frames, consists of a number of various modules for measuring and controlling specific process parameters. The system can be expanded at any time depending on need and investment budgets! The precise monitoring and control of drying processes results in potential energy savings of up to 30%. Productivity and quality of the product are increased and reproducible.

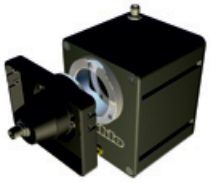
+ Exhaust air sensing – Ecomat AML
A dual zirconium oxide cell measures the humidity of the exhaust air, regulates the exhaust air volume and helps to minimize energy consumption.

+ Dwell-time/Fixing time measurement – Permaset VMT
Multiple infrared pyrometers determine the temperature curve and the software determines the current dwell/fixing time. Dryer speed is automatically optimized.

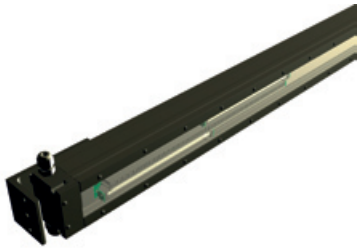
+ Residual moisture measurement – Textometer RMS
Moisture retention (residual moisture) is an important criterion in terms of later finishing, finished product scrap and energy optimizing. Electrodes at the dryer delivery measure electrical resistance to determine the residual moisture and control the degree of dryness of the product by means of the dryer speed. A variety of different electrodes is available for different applications and requirements.



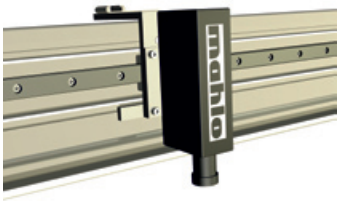
+ Weight monitoring and control system – Gravimat FMI
The weight per unit area monitoring and control system measures the basis weight continuously, without contact, non-destructively and on-line. The measurement is based for the common textile weight ranges on the attenuation of electrons from an isotope through the substrate located in the measuring gap. This attenuation in intensity is an indication of the basis weight of the product.



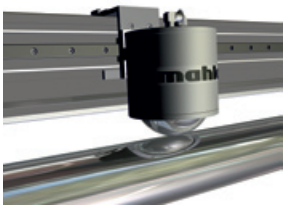
+ Control system for linear density and yield – Famacont PMC
The Famacont PMC determines the thread density by means of a non-contacting, optoelectronic process. The individual threads passing by the sensor are projected onto the photocell using a precision optical lens. The resulting frequency is proportional to the thread count. The measured thread count is displayed on a screen. A clever feed forward algorithm and two scanners ensure outstanding results on the stenter frame.



+ Width gauge – Wilot WMR
The Wilot WMR is a reliable instrument for contactless, constant determination of the product width, especially at the stenter delivery end. IR LEDs are used as retro-reflective devices to determine the product width. The sensor module only needs to be mounted at one side of the product.



+ Temperature profile measurement – Thermoscan OMF
The Thermoscan OMF prevents insufficient drying or over-drying of tubular fabric. Product quality is improved and the dryer is used most efficiently and with the greatest energy savings. The product temperature at the dryer delivery depends on the residual moisture. Knowing the product temperature thus provides residual moisture information. Thermoscan OMF measures the product temperature using a thermal radiation sensor (pyrometer), without contact and unaffected by distance or color.



+ Residual moisture profile gauge – Textodrive TMS
Total moisture content of the product across its whole working width, is a necessary for further processing after the drying process. The Textodrive TMS measures the conductivity and thereby the residual moisture content of the product using a contacting ball sensor. The sensor continually traverses diagonally over the web and records the moisture profile across the entire product width.

+ Product stretch/shrinkage – Elotex DMG
The Elotex DMG is a reliable instrument for contactless, constant determination of product stretch and shrinkage. This makes the Elotex DMG an important tool for suppliers so that they can maintain the quality requirements of their customers and reduce cost associated with scrap and quality problems.

Ecopac EMC-12 – Modular process control system

The Ecopac EMC-12 uses the most modern microprocessor technology to ensure product quality and optimize the energy balance for drying processes. The modular system for monitoring and controlling residual moisture, product temperature and exhaust air humidity can be flexibly adapted to current production. Up to three modules can be mixed and matched.

Control cabinet with 6.5" TFT touchscreen monitor, display and operation in one = system base

+ Exhaust air sensing – Ecomat AML
A dual zirconium oxide cell measures the humidity of the exhaust air, regulates the exhaust air volume and helps to minimize energy consumption.

+ Residual moisture measurement – Textometer RMS
Moisture retention (residual moisture) is an important criterion in terms of later finishing, finished product scrap and energy optimizing. Electrodes at the dryer outlet measure electrical resistance to determine the residual moisture and control the degree of dryness of the product by dryer speed. A variety of different electrodes is available for different applications and requirements.

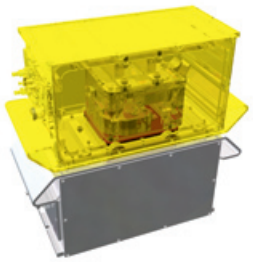
+ Product temperature gauge – Thermoset OMT
The product temperature at the dryer outlet depends on the residual moisture. Knowing the product temperature provides residual moisture information. Thermoset OMT measures the product temperature using a thermal radiation sensor (pyrometer), without contact and unaffected by distance or color.

Control system for density and yield

+ Famacont PMC-12 (Stand-alone)
Continuous, accurate measurement of pick or knitted courses is a vital factor to optimize the finish and quality of textile products. The Famacont PMC is a reliable instrument for contactless, constant determination of the weft thread and course density and controlling feed forward. This makes the Famacont PMC an important tool for suppliers so that they can maintain the quality requirements of their customers and reduce cost associated with scrap and quality problems. It operates without contact and continuously and determines the pick or knitted course density with the greatest accuracy using digital signal processing. It is universally applicable and features a smart control algorithm.

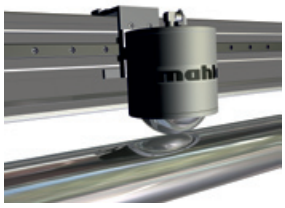
Weight measuring system

+ Gravimat FMI-12 (Stand-alone)
Weight and coating measurement system; continuous, contactless, can be used on-line. The Gravimat FMI monitors the weight per unit area continuously and without contact. The attenuation in the intensity of electrons through the material is a measure of its basis weight. The Gravimat uses a target weight and tight tolerances to reduce the range of different areal weights and thereby ensures a more consistent product. Since safety margins can be significantly reduced, valuable material is saved. Higher quality standards and production increases are the natural outcome.



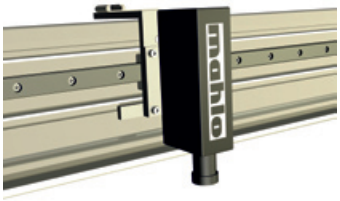
Residual moisture measuring system

+ Textodrive TMS-12 (Stand-alone)
Uniform moisture distribution across the product width is a basic prerequisite for successful finishing after a drying process in many production processes. The Textodrive TMS measures the conductivity and thus the residual moisture content of the product using a contacting ball sensor. The sensor continually traverses diagonally over the web and records the moisture profile of the entire product width.



Product temperature profile measuring system

+ Thermoscan OMF-12 (Stand-alone)
The Thermoscan OMF prevents insufficient drying or over-drying. Product quality is improved and the dryer is used most efficiently and with maximized energy savings. The product temperature at the dryer outlet depends on the residual moisture. Knowing the product temperature provides residual moisture information. Thermoscan OMF measures the product temperature using a thermal radiation sensor (pyrometer), without contact and unaffected by distance or color.



Qualiscan QMS-12 – Traversing quality control system

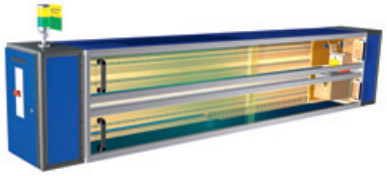
Modular quality assurance and process optimizing

The Qualiscan QMS can practically be used in every area of industry in which products are produced as a web, or where they will be finished (e.g. coated). The versatile applicable sensors and measuring devices of the Qualiscan QMS series can record, and continuously control (in-process) such parameters as weight per area, coating weight, moisture or thickness in a variety of web-type products. Applications already satisfied range from coating paper, films, non-woven, textiles, rubber and metal foils up to paper and cardboard manufacture, film extrusion, extrusion coating and nonwoven production. The Qualiscan QMS is a modular system consisting of multiple measuring sensors (modules) and traversing frames (measuring frames) centralized at one or more computers.

Frames used:

+ WebPro L
The WebPro L traversing frames represent the top of the Mahlo® measuring frame family. They are available for traverse widths of up to 8 meters, and can move up to five Mahlo® sensors across the web in uninterrupted, continuous use at high speed and with great precision.

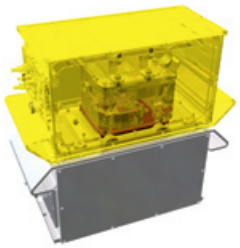
+ WebPro M
The WebPro M traversing frames were designed to be more compact than the WebPro L, but with a higher sensor payload than the WebPro S. The WebPro M is the perfect solution for web widths up to 4 meters where both ruggedness and cost efficiency are required.



+ WebPro S
The WebPro S traversing frames were designed with the aim of providing an extremely compact but still rugged and reliable traversing platform for applications where a conventional O-frame cannot be used because of space limitations.

+ UniScan M / UniScan S
The UniScan M and UniScan S traversing frames are the single-sided counterpart to the dual-sided O-frames in the WebPro series, and have been specially designed for single-sided measuring sensors in the Mahlo® Qualiscan QMS family.

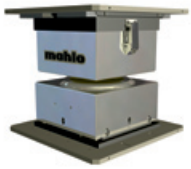
Sensors used:



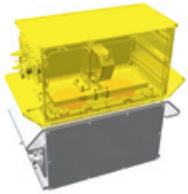
+ Gravimat FMI
The weight per unit area monitoring and control system measures the basis weight continuously, without contact and non-destructively on the moving product. The measurement is based on the attenuation of electrons from a radioactive isotope through the substrate located in the measuring gap. This attenuation in intensity is an indication of the basis weight of the product. The Gravimat uses a target weight to reduce the variation in the areal weight of the web and thus ensures a more consistent product.

+ Gravimat FMX
The weight per unit area monitoring and control system measures the basis weight continuously, without contact and non-destructively on the moving product. The X-ray radiation from an X-ray tube is directed towards the product, from which it is partially reflected back. This reflected part is measured and is an indication of the basis weight of the product.

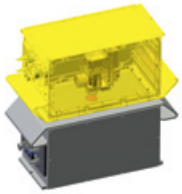
+ Infralot IMF
Infralot IMF uses optical evaluation of the reflected light energy in the near-infrared range to continuously measure and control material moisture and coatings on-line.



+ Aqualot HMF/AMF
The Aqualot HMF and AMF use microwave technology to measure moisture without contacting the web. The system measures regardless of the composition of the water, pH value changes in the material, material fillers or color pigments.



+ Calipro DML
The Calipro DML optical caliper system uses laser triangulation online to measure the true thickness of various materials with the highest accuracy.



+ Calipro DMP
The air cushion principle for material thickness measurement is designed especially for slowly running product webs with a dense, closed surface. It is ideal for calendered transparent films, where the laser technique can fail due to insufficient reflection of the laser beam from the surface of the film. .

+ Glosspro GMR
A pulsed LED white light source is concentrated through an appropriate lens onto the surface of the product web. The light reflected from the surface of the product web under the desired angle of reflection (60° or 75°) is collimated using a lens. The intensity of the reflected light beam is used to determine the degree of gloss.

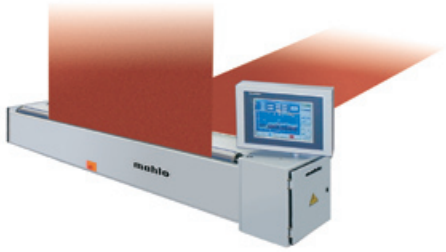
Process control system

+ Mahlotex PMR
The Mahlotex PMR process control system enables setup data to be forwarded to the production equipment within seconds. An intelligent alarm management system helps to detect and document errors at a early stage, since all the systems located on the production equipment are centrally monitored. The Mahlotex PMR is not limited to any machine type or manufacturer. A consistent operating concept makes it extremely user-friendly.

TEXTILE NONWOVEN PAPER PLASTIC

PRODUCT INSPECTION

Online color measuring system



+ Colorscan CIS-12 – Color inspection system
The traversing color scanning system for product inspection. The measuring system used in the Colorscan CIS is based on a spectrophotometer with a 0° / 45° geometry. Traverse speeds of up to 1.2 m/sec can be reached. The measuring spot created in dynamic mode is approx. 18 mm wide and 60 mm long. Repeatability of the measured values is excellent

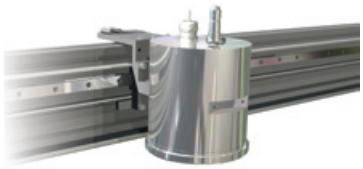
Automatic product inspection system

+ Webscan WIS-12 – On-line defect detection
The Webscan WIS fabric inspection system uses the latest camera technology to detect fabric defects on-line. Various defect classes are distinguished. Depending on the requirements, up to 8 appropriate line cameras can be equipped. The standard system is designed for product speeds of up to 100 m/min (higher product speeds on request). Product illumination in a housing to prevent ambient light effects can be accomplished using reflected or transmitted light with a diffuser. Various light types and colors can be selected depending on the application. Mahlo® also offers complete solutions consisting of a center de-rolling unit, CIS Colorscan inspection system for on-line color measurement, WIS Webscan, inspection table, and center/tangential winder with ultrasonic sensors for calculating torque and diameter.

Automatic coating inspection system

+ Coatscan TCS-12 – On-line blade stripe detection

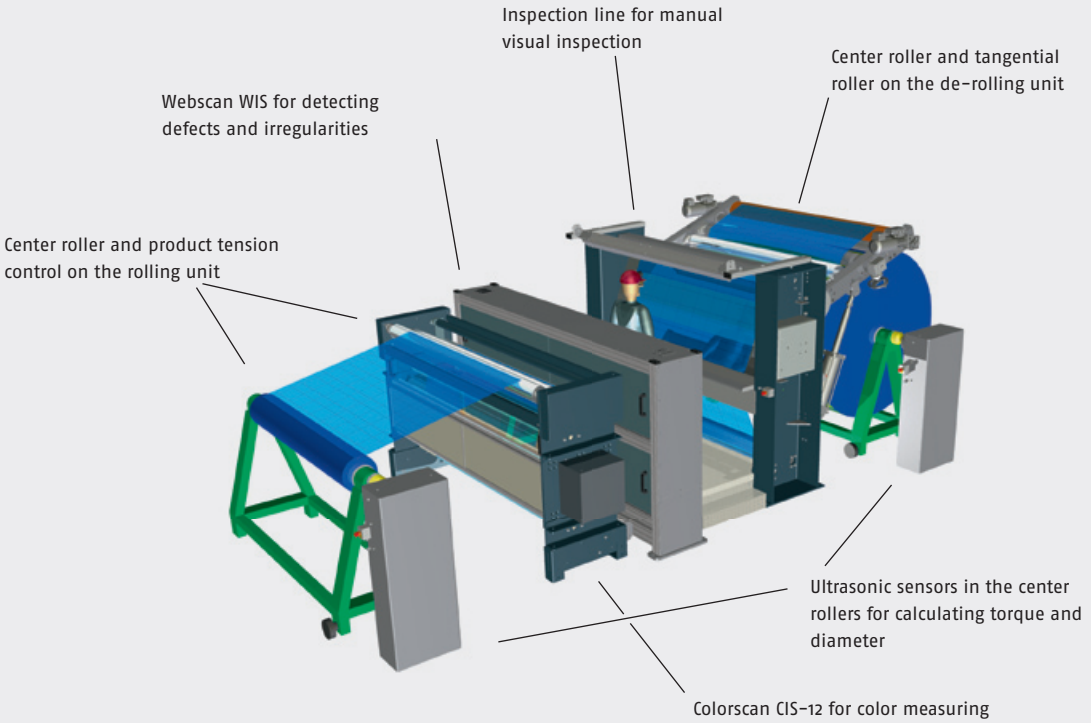
The Coatscan TCS features a high-resolution area camera. This is integrated into a traversing unit which brings the camera in transverse direction to the web when it leaves the coating head and thereby scans the entire product width. Blade stripes and other coating defects are detected as soon as they arise so that they can be immediately eliminated. This prevents scrap and significantly reduces defective products.



On-line sampling

+ Samplecut FSC-12 – Automatic sample cutter

To monitor the progress of certain processes, there is no alternative but to take frequent samples at the machine itself. But this is normally only possible while the product is either moving slowly or stopped, and often results in complicated work-arounds to enable continuous production (continuously running winders, etc.).
The newly developed Samplecut FSC is the solution for this problem. The tried and tested sample cutter Samplecut FSC takes samples from fast running fabric.

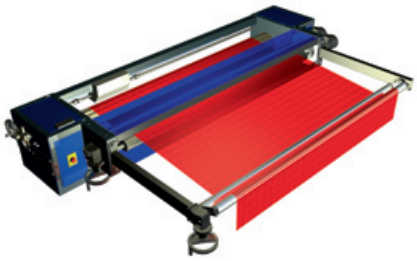


Mahlo® unrolling station with product inspection and color measurement.
Designed and built for a leading textile producer.

TEXTILE NONWOVEN PAPER PLASTIC

PRODUCT GUIDING

Guiding and stentering roller



+ Ceremat MMZ-12
Drifting of the product web lateral to the product's running direction is unavoidable in some stages of textile finishing. The Ceremat system, consisting of several components, brings the product back on the right path. Application-specific variants are available.

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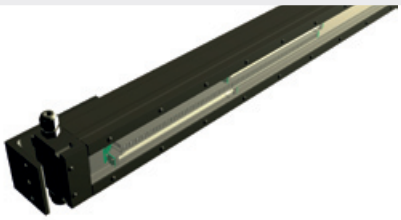
SMALL AND PORTABLE EQUIPMENT

Width gauge



+ Wilot WMR-12
Automatic width measurement on a running product web. The system continuously and precisely determines the width of product online. The compact design allows it to be installed even in the tightest mounting spaces. Retrofitting is possible virtually anywhere.

Moisture and temperature gauge

+ Textometer DMB
Portable moisture and temperature gauge. The Textometer DMB is a handy, digital instrument for precisely controlling the moisture content of raw materials, semi-finished products and finished materials. In addition, the surface temperature can be measured with or without contact. With an add-on, the Textometer DMB can also be used as a conductivity gauge for electrostatic flock coating.

Moisture tester

+ Aquarius AMZ
The pocket-sized moisture tester
The handy moisture tester for quick checking actual moisture distribution, especially in yarn packages.

Ionizer

+ Antistat AMW
Effective against static charge. The Antistat AMW ionizer for trouble-free processing of synthetic materials and of textiles with high charge separation. By ionizing the ambient air, the electrostatic charge is removed from the product sheet. Antistat AMW can be used at high or low speeds.

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DATA MANAGEMENT

Logging, archiving, interface package. Saving and archiving all of the important production data is gaining increasing importance in modern production operations. Mahlo® can provide a variety of resources for your data management needs. The flexibility of these tools enables individual solutions for customer problems.

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