PATCONTROL PCS-20

Pattern detection, distortion correction, repeat control.

Quality made
in Germany

TEXTILE NONWOVEN COATING & CONVERTING PAPER EXTRUSION

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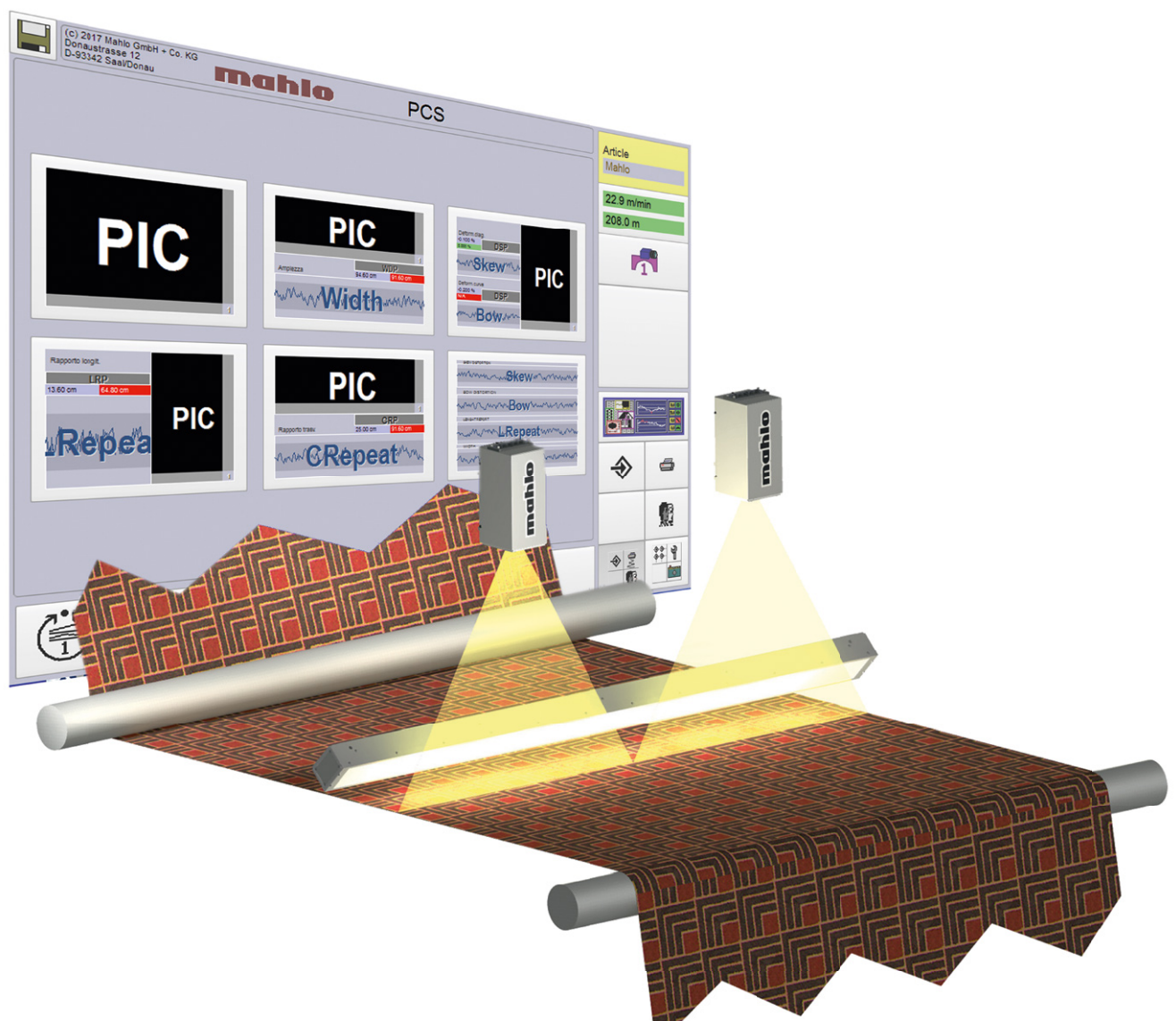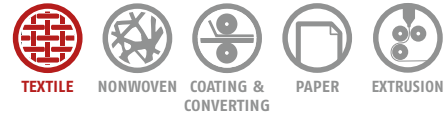
PATCONTROL PCS-20

A modular system designed for pattern detection, distortion correction, repeat control and logging of errors and irregularities over the entire working width.

Product-Highlights

✓ Modular assembly
✓ Measures repeat and straightens patterns simultaneously
✓ The very latest hightech line cameras
✓ Easy to retrofit
✓ User-friendly
✓ Comprehensive operating software with corresponding visualization

Customer benefits

✓ Uninterrupted monitoring and logging of actual product quality
✓ Savings in raw materials and energy at the manufacturing stage
✓ Increased productivity
✓ Optimized quality assurance
✓ Optimized process repeatability
✓ Short payback times

Area of application

Modern textiles present challenges in production and finishing to manufacturers which did not exist like this in the past. Materials with major variations of density or elasticity are used especially in the area of processing technical textiles. Producing straight or aligned patterns becomes therefore more and more difficult. To still deliver the desired quality to customers, textile manufacturers must observe smallest tolerances of parameters such as pattern repeat or pattern distortion. After all, nobody would accept distorted patterns in carpets, textile printing, woven goods and knitwear, because the distorted designs affect the looks and usefulness of the product resulting in dissatisfied customers and complaints.

Principle of operation

Depending on the application area of the Patcontrol PCS, Mahlo configures the system individually. The system uses one or two cameras – depending on the width of the product to be processed – to automatically detect the position of the pattern and continuously determine the pattern repeat, measures the product width, and – together with a weft straightener – aligns the product distortion based on the print pattern.

Analysis software versions

+ **PDS** (Pattern Distortion System) pattern distortion detection and control
+ **PRS** (Pattern Repeat System) pattern repeat detection and control

Both systems work with different pattern typing. To generate the best possible analysable image of the pattern or the product structure on the screen, a special lighting unit, working with transmitted or reflected light, supports the line scan camera. The system works with different analysis algorithms, depending whether the patterns shall be calculated perpendicular to the running direction or in length or cross repeat. They also depend on the pattern itself (e.g. Pattern, lines, etc.). The Patcontrol PCS adapts to sudden changes of the product width. Intervention of the operating personnel is largely not required.

Device versions

The Patcontrol PCS can be individually adjusted:

+ **Standard device** for one measuring point, consisting of:
  – Switching cabinet with industry PC with touchscreen, lighting module, pulse tacho
  – optionally, one or two camera modules (depending on product width)
+ **Extension** per additional measuring point, consisting of:
  – Switching cabinet, lighting module, pulse tacho
  – optionally, one or two camera modules (depending on product width)
  – optionally, additional industry PC with touchscreen (otherwise, the extension is operated from the standard device)
+ **Customer-specific special versions** are possible!

Typical applications

– Straightening curtain and lace fabrics, monitoring pattern repeat and controlling an overfeed roller
– Straightening woven and tufted carpeting ahead of a coating process
– Straightening terry fabric (e.g. hand towelling)
– Fine-tune straightening of printed cloth
– Measuring and sorting pattern repeat
– Continuous measurement of width
– Data-logging pattern repeat and distortions on carpeting
– Straightening residual bow and skew in carpeting at the stenter outlet
– Special analysis and measurement of industrial fabrics
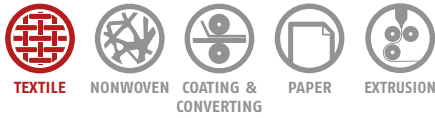

Towel straightening PDS–RMM

Carpet inspection PRS
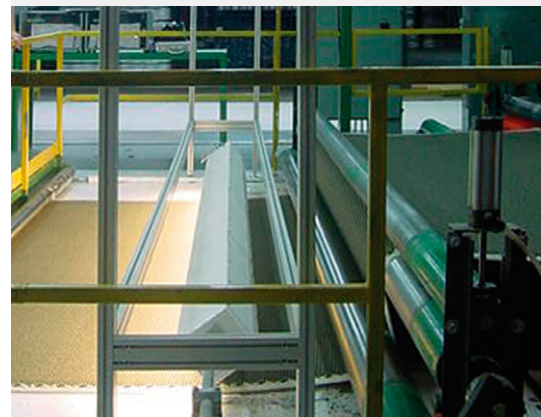
Carpet inspection PDS/PRS combination

Perching machine

VISUALIZATION

EVERYTHING AT A GLANCE

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Product-Highlights

✓ Clearly arranged presentation of the distortion characteristic
✓ Menu-controlled service settings
✓ Freely scalable trend dia- grams
✓ Password protection: Unau- thorised users are prevented from accessing the program
✓ Recipe management

Customer benefits

✓ All key data at a glance
✓ Menu guide in all common languages
✓ Ergonomic user prompting
✓ Simple operation
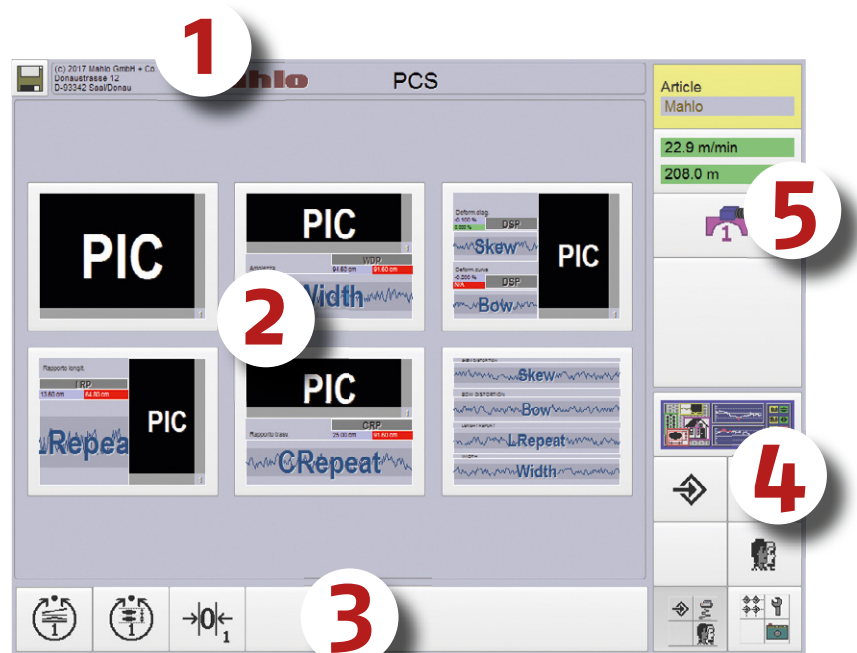
Main page

The user interface consists of five areas:
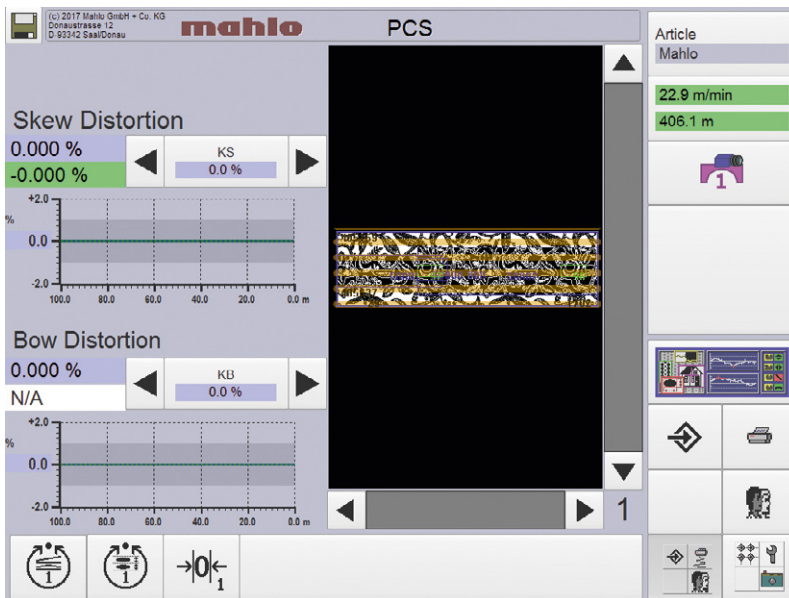
1. Title line:
General information (including alarm bar)

2. Display area:
Selectable screen pages (display forms)

3. Horizontal block:
Operating buttons for basic functions and submenu

4. Selection block:
Navigation within the operating software

5. Vertical block:
Operating buttons for the menu selection

![mahlo trendsetting technology. worldwide.](mahlo logo)

Trend display skew detection
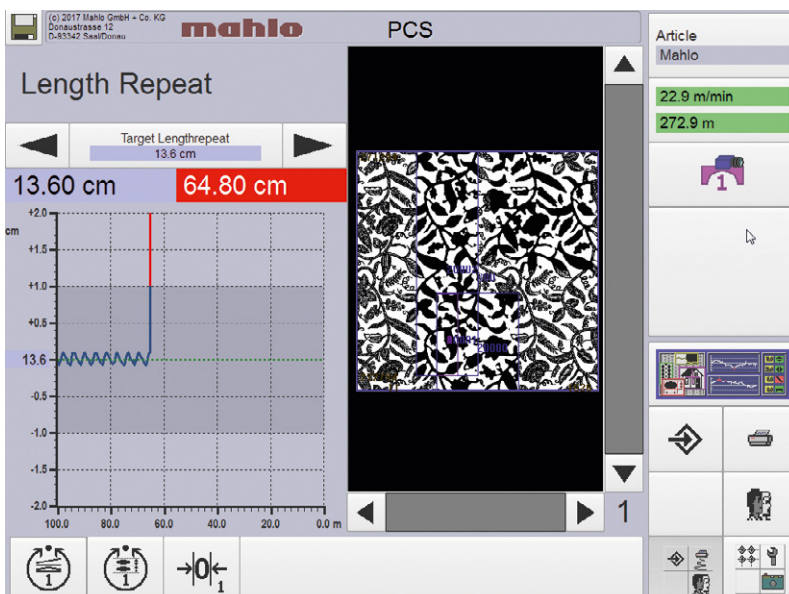

Trend display measurement of repeat

RELIABILITY

Our machines do exactly what we build them for: Hour after hour, year after year. Making sure you will always reach your goal.

All entries are made directly on the touchscreen using large, ergonomic buttons. Operation is simple and intuitive. All the key information is visible at a glance.
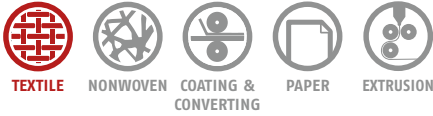
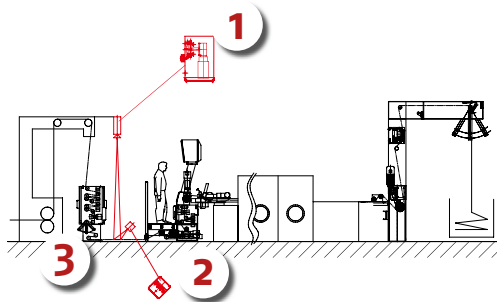**TEXTILE** NONWOVEN COATING & CONVERTING PAPER EXTRUSION

TYPICAL APPLICATIONS

EVERYTHING AT A GLANCE

The system has confirmed its ability to automatically realign bow and skew distorted industrial fabric, bordered terry fabric, printed dress material and flocked products.
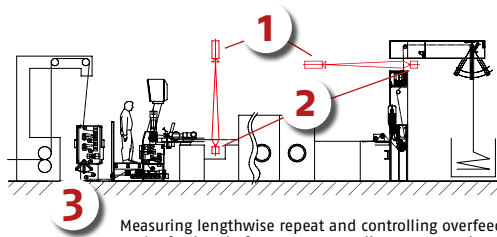
1 Patcontrol PCS Camera
2 Patcontrol PCS Lighting
3 Orthopac RVMC

It can also be applied to products which simply cannot be detected and straightened by conventional systems, lace and raschel curtain fabrics for example. A Patcontrol measures continuously and accurately the motion-way pattern and controls an overfeed or similar device in order to ensure an as accurate and consistent as possible pattern repeat.

1 Patcontrol PCS Camera
2 Patcontrol PCS Lighting
3 Orthopac RVMC

2-camera systems capable of detecting pattern-related bow and skew across the full width of the product and logging any residual distortion are likewise employed in a practical way. The unit can be either put to use on a perching machine to document possible residual bow and skew, or combined with an Orthopac straightener or weft-control system as an alternative to their respective scanning systems. On finishing lines in the carpet industry, they differentiate between two distinct applications:

+ **1. Distortion:**
  – feed-end straightening
  – delivery-end straightening
  – control of draw roller
  – data logging

+ **2. Repeat:**
  – control of draw roller
  – measurement of repeat and sorting for the carpet layer
  – data logging

1 Patcontrol PCS Camera
2 Patcontrol PCS Lighting

The opportunity to document pattern lengths and distortion across the full width of the product provides the carpet manufacturer with valuable information on, for example, how accurate and consistent the design repeat really is on each individual roll of carpet. With the help of this information, the carpet layer can sort the rolls into a definite sequence before they are laid. Slight variations are then blended in during the laying process, and more pronounced ones sorted out for disposal elsewhere.
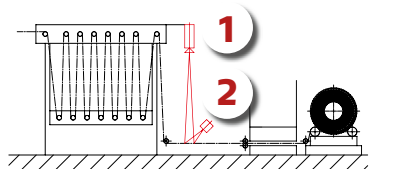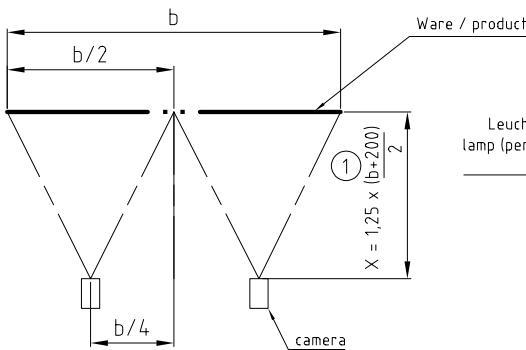

Pattern straightening at the stenter feed end

Measuring lengthwise repeat and controlling overfeed at the feed end of a stenter, recording repeat and realigning patterns at the delivery end

Recording repeat behind an accumulator

TECHNICAL DATA | **PATCONTROL PCS**

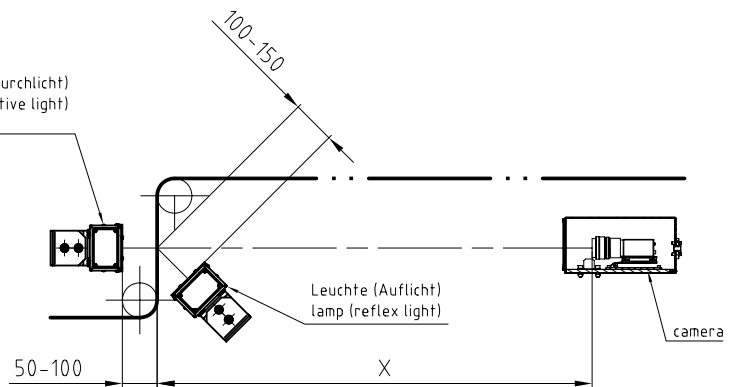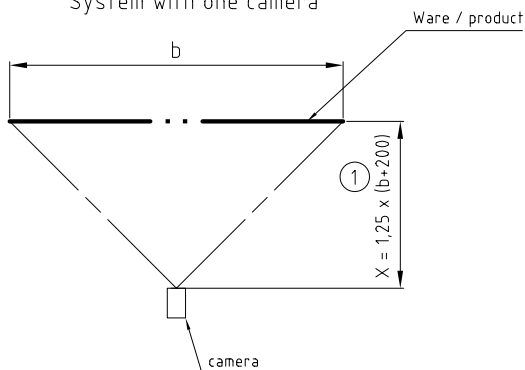| Device	Patcontrol PCS
Measuring principle	Optical measuring method with camera technology
Nominal product width, maximum	5.00 m
Product speed, maximum	120 m/min depending on resolution and lighting
Camera cable Length, maximum	20 m
Rotary pulse encoder	5000 pulses/revolution
Dimensions	depending on the product width
Power supply	1 x 230/115 VAC, 50/60 Hz
Temperature range	5 – 50 °C

Dimensions

System mit zwei Kameras
System with two cameras

$X = 1,25 \times \dfrac{(b+200)}{2}$

Ware / product

Leuchte (Durchlicht)
lamp (penetrative light)

100–150

Leuchte (Auflicht)
lamp (reflex light)

50–100

X

camera

System mit einer Kamera
System with one camera

Ware / product

$X = 1,25 \times (b+200)$

camera

b = Warenbreite / product width

PATCONTROL PCS Einbau
91–014244–01

PATCONTROL PCS

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trendsetting technology. worldwide.

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