



The battery of cameras on the defect detection system is configured to match the web width.

Detection and control

C. Wagner, Mahlo GmbH & Co explains the company's latest developments in the testing and control sector

Mahlo has established itself as one of the world's major producers of measurement, control and automation systems for the textile industry and for the paper, foil and coating sector.

The family run company, based in Bavaria, has added several new options aimed at providing customers with a reduction in the use of energy, raw materials and human resources while optimising quality, equipment utilisation and work flow.

Hybrid scanning in the Orthomat

Shorter product life cycles, increasing product variety and a rise in quality and delivery expectations are typical features of today's textile market. To remain competitive, producers have to produce high-quality products with short turnaround times. New ways have to be found to detect distortion under these demanding conditions and perform other functions such as simultaneous pattern repeating and pick counting. Mahlo's answer is hybrid scanning, which combines oscillation technology using a 12 scanner head and an anoptronic image scanning unit.

Experience in machine vision applications using pattern detection products coupled with advances in camera technology have enabled Mahlo to use certain aspects of this technology for distortion detection. The

strengths of both systems have been combined without changing the dimensions of the compact scan head (13cm depth). The head can still be used where space is at a premium.

With this unconventional solution, no adjustments are needed to handle different goods and the image remains in focus.

The double-side scanner can inspect the face and back of the fabric in one pass. This means that the fabrics that run through the production process with the surface facing the wrong way can still be checked.

Automation fabric detection is a key aspect of this new technology. The straightener has to be re-adjusted for problematic fabrics. A "fingerprint" of the fabric only needs to be stored once. The machine then automatically detects the fabric and uses intelligent SOS (Self Optimizing System) technology to select the correct recipe. This, says Mahlo, eliminates setup and changeover times, reduces operator workload and avoids possible sources of operator error.

Up to 80 readings per second can be taken across the width of the fabric while the placement of 4 - 8 scan heads on each side of the fabric creates a representative image of the overall distortion pattern.

Other benefits include the evaluation of small and micro patterns, detection of partial distortion and the intelligent determination of thread density.

Online detection

After unprocessed goods have been printed or coated, ugly defects that were previously undetectable can appear. A great deal of time is often invested in up-front quality control (visual inspection), but the human eye cannot perform inspection at high speeds. The goods have to move very slowly, and small defects still remain undetected. In addition, the inspector cannot check the entire width at once.

The WIS-12, Mahlo's automatic defect inspection system uses camera technology to check for defects on the moving web. Up to 100% of defects can be detected at high web speeds (up to 100 m/min) while the resolution of the system enables it to detect defects (as small as 0.5 mm) that are invisible to the human eye.

The number of line cameras that are used depends on the web width and the required resolution. The cameras are placed above the web, which is illuminated with reflected and transmitted light. A variety of product requirements can be accommodated by varying the lighting conditions and making optical modifications. When the web is scanned, MergeViewer analysis software detects the defects and records the events. When the run is complete, the error log identifies the location of every defect on the web with accuracy to the nearest millimetre. The scan image can also be stored and viewed

Compact and flexible- the new online width measurement solution form Mahlo.



and the defects can be accessed on the scan.

Width detection

In the ready-made clothing industry, it is very important that the goods are delivered in exactly the right width. If the goods are too narrow, they are unsuitable for the cutting operation. If they are too wide, too much material is wasted.

The new Wilot WMR has been geared towards these requirements. It uses wear-free LED technology to perform single-sided, non-contact detection. Infrared LEDs operating in reflex mode detect the width of the moving web. Retro-reflective sensors are only needed on one side of the web. The web does not have to be threaded in and there is no risk of contact between the goods and the sensor.

The sensitivity of the sensors can be adjusted and a minimum or maximum width can be defined - for example to trigger an alarm function. This solution enables in-process intervention and correction. The Wilot WMR has been

carefully designed to make the sensor immune to spurious or ambient light. Two versions are available to handle a wide variety of applications: a stand-alone version with digital display and a module version for use with an Orthomat and visualisation on a TFT touch screen. Other versions are currently in the development phase.

Mobile measurement

Goods that have important geometric features are produced across a number of sectors - for example knitted or woven fabrics or perforated and patterned plate in the furniture and steel industry. The product range can be very diverse, and the geometric characteristics often have to be identical in order to meet specific market requirements.

Online measurement systems would be too costly and cumbersome in these applications, and the risk of variation in product dimensions during production is very low. Sample checks are sufficient

so a compact, mobile device provides a solution.

The Gridscan IMG was developed specifically for this purpose. The small, pistol-shaped device is used for non-contact geometric measurement, providing a simple and user-friendly way of conducting quality control inspection.

A pre-calibrated camera captures a live image at the point of use. The user can press a button to freeze and save the image. The geometry of the goods is then evaluated automatically, and the results are displayed on the screen of the integrated Ultra Mobile PC.

There is no contact during the detection process and no force is applied to the goods or target object. The objects retain their shape, and the geometry of the objects is not changed. **TM**

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