Unique innovations for the converting industry

New inspection features enable reliable detection of defects on structured materials

The highly developed optical inspection systems by ISRA VISION offer 100% in-line inspection in all converting processes. The systems have successfully established a standard for detection of defects in converted material. The technological enhancement with innovative and unique "Missing Feature Detection" and "Pattern suppression" tools offers users the ability to detect missing structural elements in materials. It is now possible to detect defects even on textured surfaces thanks to new pattern suppression algorithms.

In the costly manufacturing processes, concealing and laminating, defects can simply not be tolerated. Low-contrast and tiniest defects have to be detected even at large web widths and increased web speeds. At the same time, data volume in the converting industry is extremely high. These challenges are mastered reliably by highly-flexible, camera-based all-in-one inspection solutions by ISRA, in which the technical competence and the experience of a global market leader for surface inspection have been integrated. The systems are applied in a variety of industries and are used to inspect coated films, non-woven and paper webs at rapid speeds and with highest resolutions.

Typically, line camera inspection systems work with an upper and lower limit value for the intensity values of each line. As soon as the values are outside of the normal range, a defect will be the result.
Defect classification is based exclusively on this "threshold value information". Until now, conventional systems could handle such volumes of data only with simple algorithms.

**Highly-developed algorithms expand the range of applications**

The ISRA technology is a huge step further in the evolution. The method described is only used as a forecasting feature. The systems are able to handle more information compared to conventional systems due to the high computing power. This enables the accurate evaluation and generation of detailed information by using 2D images. With highly developed image analysis algorithms that supplement the comprehensive inspection systems, there is a significantly wider range of analysis options in real-time than what has been available using traditional methods.

In order to include the detection of defects and irregularities that lurk in bumpy material with textured surfaces, the application ranges of the inspection systems can be expanded even more. The inspection adjusts automatically to the surface structure. Complex filters are used for 2D images that can also be in color - a unique feature of ISRA VISION systems that stands out from the competition.

The innovative "Missing Feature Detection" (MFD) method allows the inspection of textured material and identifies the missing structural elements distinctively. Irregularities or changes in the structure are detected reliably with the 2D image information. As such, the range of applications for inspection systems also includes functional properties.

Yet another method for the inspection of textured material serves to suppress structures. By using innovative and highly developed algorithms for defect detection the ability to recognize light and dark...
defect points is enabled. The structured stripes are suppressed and no longer disrupt as pseudo defects. As an additional feature, the high-speed band measurement simultaneously provides the ability to measure and statistically analyze the distances between the strips in a special channel width.

The first four systems that employed the new features "Missing Feature Detection" (MFD) and "Pattern Suppression" have been running successfully for months in production applications at various customers. The new features are in use at applications such as the production of separator foils for batteries, coating filter materials and food packaging materials. Because of the universal variety of applications and the high performance characteristics, we can expect that there will be a demand for these flexible systems at other locations.

**Optimizing the quality and increasing the resource efficiency**

The inspection systems guarantee that the quality will be significantly improved even in the early processing steps and consistent quality will be the result based on defined standards.

Long-term data archiving allows for clarity in the event of a complaint: The manufactured quality can be verified. Reports and a variety of statistical tools tailored to the specific customer as well as trend reports assist in avoiding defects altogether and also in reducing scrap resulting in lower costs. Another tool allows users to control the entire system from different positions within production – for shortened operator’s response time. Data mining creates customer-specific and even personalized reports, makes failure cause analyses possible and assists in developing strategies to avoid defects in the future and optimize the production process. Thanks to the systematical evaluation...
with the analysis tools an improvement in the product quality with the ultimate goal of zero-defect production is assured.

ISRA offers its customers increased value and profitability by providing intelligent tools that optimize inspection and converting processes along the entire production chain.

**Images**

408_1:

No more defects in the structure:
Continuous detection of abnormalities - The innovative add-on
Missing-Feature-Detection enables the inspection of structured materials
**408_2:**
Easy recognition of bright and dark defects due to new and unique method for suppression of normal structuring on the material surface

**408_3:**
For 100% quality assurance - geometry measurement and defect detection in one system