

Automatic Process & Quality Control for Window Film



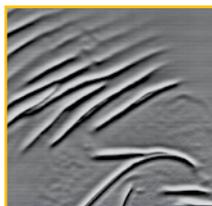
Window Film

The complete inspection solution for
window film

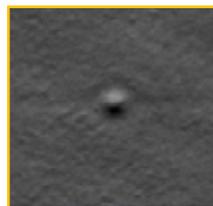
Bent



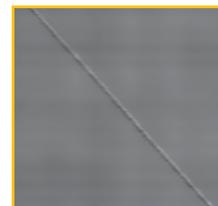
Wrinkle



Dent



Scratch



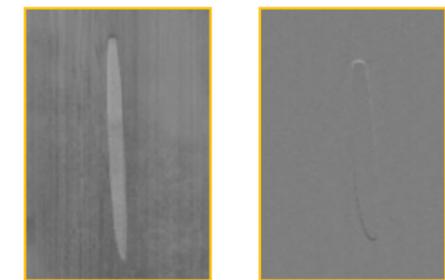
KEY BENEFITS

- Window film quality grading by simultaneous defect inspection and monitoring of Visible and Infrared Light Transmissivity (VLT/IR)
- New generation of sputter and coating process control due to full web monitoring in ultra-high resolution: 1% change in VLT or IR can be resolved to more than 300 gray values
- Cost effective multiple material characterizations: 1 camera line serves 5 channels
- Extreme small form factor for easy line integration: The multiple channel inspection with the same space consumption as a single channel system



Unique MIDA Inspection

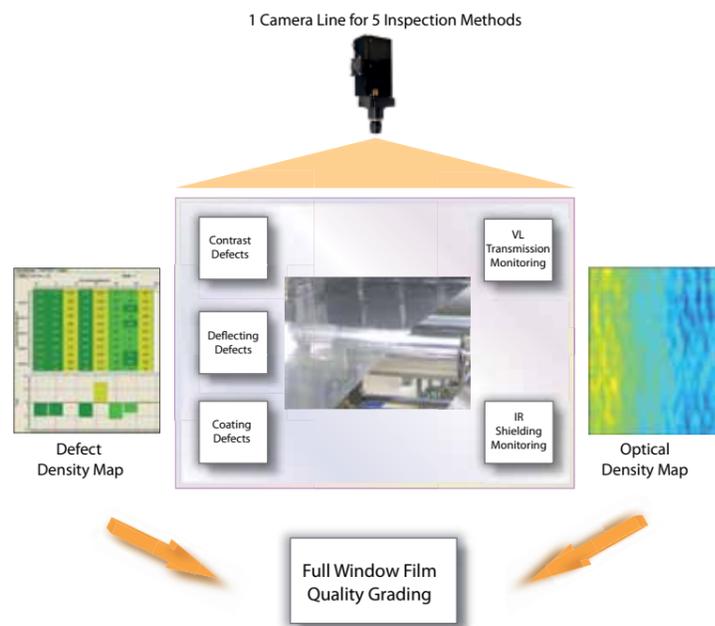
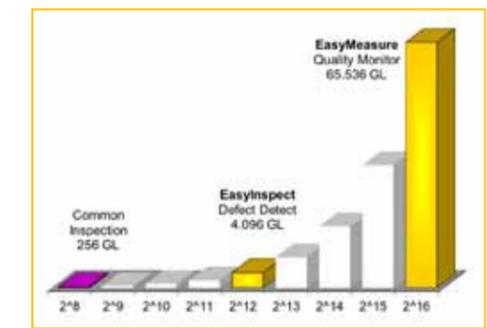
With Dr. Schenk's unique Multiple Image Defect Analysis (MIDA) all typical kinds of window film defects (e.g. color dust, scratches, wrinkles, bobbles, uncoated areas, dents or bents) can be fully analyzed in one run. Thanks to ultra-high speed illumination switching and multiple channel optics per one single camera line all of them can be detected and classified in substantially greater detail compared to any other inspection technology.



Uncoated area in Reflection channel (left) and Transmission channel (right)

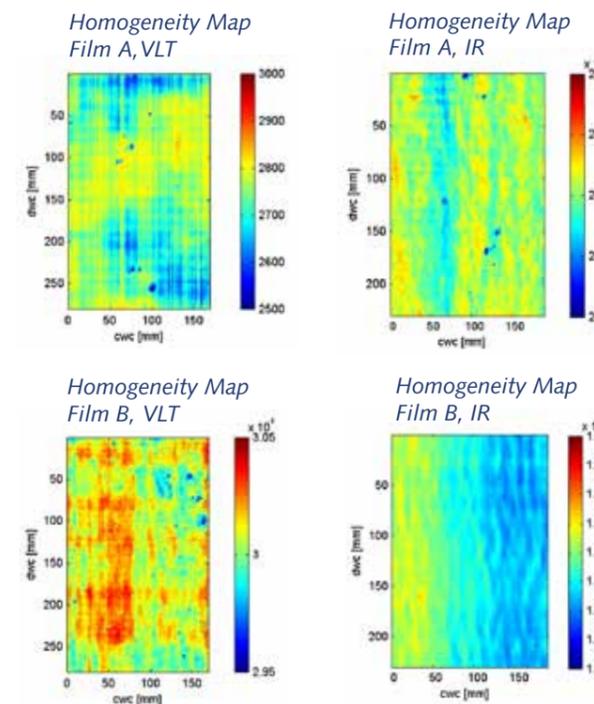
Monitoring Layer Homogeneity

For a typical window film application of up to 2.000 mm width, the more than 16.000 EasyMeasure brightness gauges guarantee the consistent quality and detect the critical deviations of the coating, sputtering, and evaporation processes. They monitor the optical density changes in the IR-absorbing and VLT-controlling layers with 16bit Gray Level resolution (65.536 GL). EasyMeasure allows detecting the optical density variations revealing detailed information about the converting processes and supports the production improvement as well as the quality grading of the final product.



5x Material Properties in a Single Scan

The window film industry is characterized by versatile applications, high quality requirements and a growing material demand for both quantity and quality. To provide customers reliably and timely with high-quality window films for architectural and automotive applications, an effective integrated inline inspection solution for window film production is a key competitive advantage. Quality control by Dr. Schenk's EasyInspect and EasyMeasure systems for inspecting window films provides the leading edge advantage for not missing any defect or coating issue.



The figures on the left show VLT and IR homogeneity maps at window films with different light transmissivity: The false color pattern comparison of VLT and IR channels reflect on different process steps and therefore do provide independent and complementing perspectives on the material quality.

The Complete Solution

EasyInspect and EasyMeasure are the only fully production-integrated, automatic optical inspection solution for window film that combines all the five necessary channels in one camera line. It is the best investment to save time, money and resources, in order to improve the quality of the window film production.





Dr. Schenk's production site

Dr. Schenk GmbH, established in 1985, is an innovative high-tech company based in Munich, Germany. For the third decade now, the range of products and services offered by Dr. Schenk comprises comprehensive solutions for automated quality assurance and production process monitoring for the flat glass, film and foil, converting, paper, solar, optical media and semiconductor industries. In these areas Dr. Schenk continues to set new standards for the inspection of surfaces through the utilization of the latest technical advances in optics and electronics.

The company's primary objective is to achieve complete satisfaction of our customers on a long-term basis. This vision is realized by a perfect synergy between innovative solutions and practical ideas. Global sales and service facilities ensure local support, technical service, training and consulting at any phase of a project. From modular standard units to complex and highly customized systems – Dr. Schenk's high performance test and inspection products have precision in focus!

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