

In-line Inspection for Polarizing Film: Quality and Process Control in LCD Composition



New media, HDTV and 3D-TV place increasingly high requirements on display technology to produce defect-free, large LCD displays. In the layer stack of an LCD panel the polarizer films play a key roll, as they determine the brightness and contrast of the display.

Dr. Schenk offers groundbreaking technology that combines defect detection and quality monitoring of the final product.

EasyInspect identifies miniscule defects that can occur during the production, laminating and finishing process. EasyMeasure monitors the film properties, e.g. homogeneity, during all production steps.

Benefits of automated optical inspection and simultaneous monitoring of polarizing film material

The innovative optical inspection solutions EasyInspect and EasyMeasure allow complete quality control (ISO 9001) that matches the steep requirements of product liability. At the same time they help to reduce life-cycle costs caused by poor quality products and minimize material waste during production (ISO 14001).

Laminating defect



Y-spot



Scratch



Halley Bear



PET bubble
in reflection



PET bubble
in transmission



KEY FEATURES

- Advanced camera and illumination technology for highest contrast and optimized resolution
- High defect sensitivity with brightfield and darkfield channels
- Reliable and accurate classification of defects
- Easy integration into production lines
- Standard components for optimal price/performance ratio
- User-friendly interfaces (SEMI standards)
- Data storage function for quality evaluation and process optimization

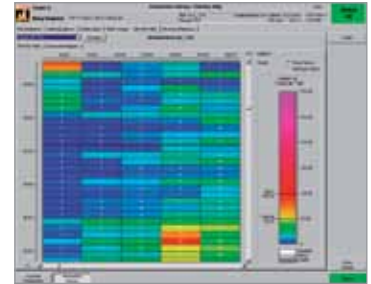
Ensure product quality and optimize the stack composition process

EasyInspect identifies defects and irregularities that can occur at any step of polarizing film production. The system's innovative optical set-up and its image processing and visualization software are adapted to the specific requirements of polarizing film production.

EasyMeasure: 100% control of the production process

The combination of EasyInspect with EasyMeasure allows full control over the extrusion, laminating and finishing processes and through this over the quality of the end product. It features:

- 100 % coverage of the web material
- In-line monitoring of web properties using existing EasyInspect modules
- Industry proven design without moving parts
- Operator-friendly visualization and real time 2D map



Typical defects in polarizing films detected with EasyInspect

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|--|--|
| Semi-finished film | <ul style="list-style-type: none">• TAC scratch• PVA defects, material defects (transmission spot, y-spot, slanted spot)• Lamination defects (polarizing bubble with / without white point, peeling, particles, fibers)• PET Bubble (with particle)• PSA bubble / undissolved glue / with foreign particle |
| Finished film prior to marking and cutting | <ul style="list-style-type: none">• PSA with foreign particle• Halley Bear• Particles on PET |
| All production steps | <ul style="list-style-type: none">• Repeated roller defects, roller dirt |

KEY BENEFITS

- Optimize the production process through immediate feedback
- Create consistent quality standards by rejecting material with irregularities from further processing
- Improve yield by quickly identifying the defect source
- Gain in-depth knowledge of the production process through quality documentation, history and statistics reports

About Dr. Schenk

Dr. Schenk GmbH offers inspection and measurement solutions for automated quality assurance and production process control - a key success factor in the making and converting of many materials, e.g. plastics, textile materials, nonwovens, paper, metal, or glass, for a multitude of markets like display glass, automotive, packaging, medical, renewable energy, and many more. From modular standard units to highly customized systems – Dr. Schenk's solutions have precision in focus!

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