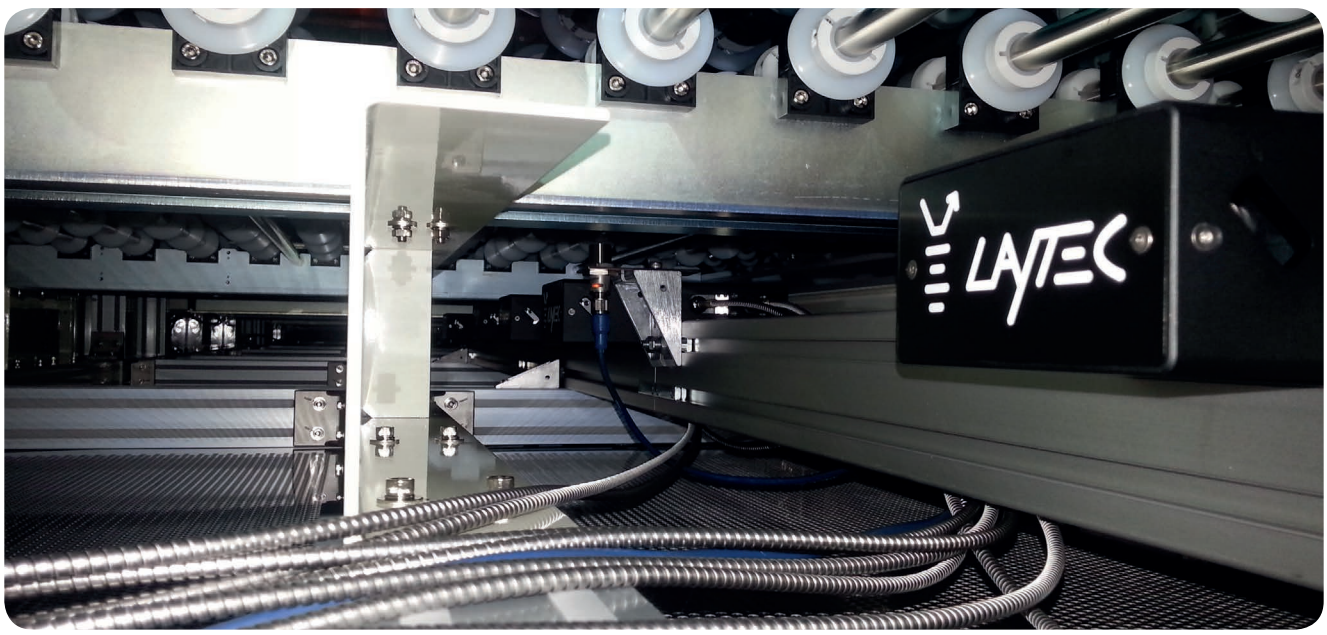
Flames

Functional Layer Measurement System



Flames system implemented into Gen8 production line

LayTec Flames is a multi-head optical measurement system for monitoring of thin-film in large area processes. Typical applications are functional layers in display industries, foil coating (roll-to-roll), and glass coatings. Flames is suitable for nearly any thin-film production line. With its contact-free optical approach it measures close to the process and allows closed-loop control of layer deposition and etching. With LayTec Flames you get homogeneity information of layers at the tact rate of your line, directly after processing, complete with statistical analysis. You can apply quality thresholds and alarms for fast reaction of operators.

Benefits

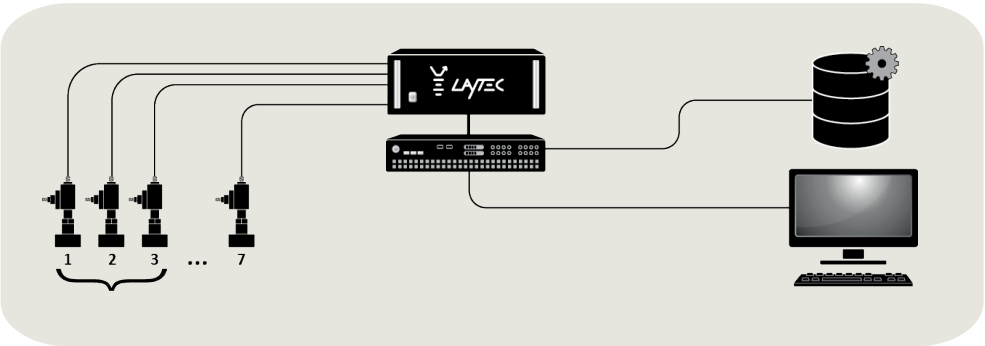
Tight production monitoring: The Flames system integrates directly in or after the production step. This allows fastest access to process results.

Fast root-cause analysis: End-of-line inspection is limited in revealing the root-cause of failure. Especially, if the failure occurs in an early production steps. Flames helps in analyzing layer by layer quality and process improvement. Losses are minimized and yield is enhanced.

Feed-back control: Flames offers highly sensitive detection of process deviations early on. Manual or automated process correction is possible by fast analysis of material parameters with high resolution before out-of-spec material is produced.

Measurement capability

- Reflectance
- Transmission
- Layer thickness
- Surface roughness
- Sheet resistance



LayTec Flames measures directly at or in the process equipment for fast feed-back with measurement resolutions that rival lab measurements. Several methods can be combined into one system. A variety of measurement heads allows application in-vacuo, ex-vacuo, through view ports, and / or at high temperatures. Measurement range reaches from UV to IR (300-2500nm). Complex analysis like layer thickness is performed on-the-fly in real-time.

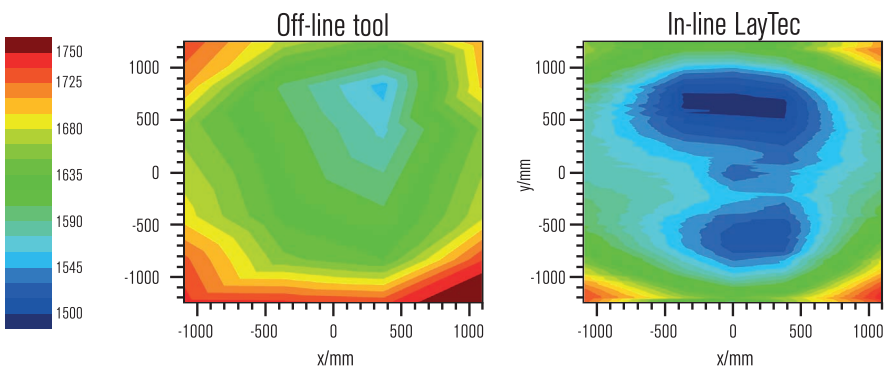
System setup

The modular setup enables small and customized measurement heads for rough environments, while delicate optics and electronics can be mounted safely in e-racks. The state-of-the-art PLC (Beckhoff) and software (C# .Net) is capable of communicating with nearly any Measurement Execution System, Yield Management System, or home-built database. Supported field buses: ProfiBus, DeviceNet, CAN, RS485, RS232, others on request.

Example: Measuring a-Si layer in display production

Application: in-line reflectance measurement for on-the-fly layer thickness analysis of an a-Si / SiO / SiN stack with metal contact pattern on Gen8 glass panel, directly after deposition in a cluster system.

The system has no impact on the tact time and is easily integrated into the line on a conveyor. The measurement was performed on five traces with five measurement heads. Each trace yields 100 measurement points per panel. This allows detailed homogeneity control and statistics (min, max, ave, percentiles) over the whole panel size.



a-Si layer homogeneity interpolated colorplot of Gen8 panel (500 pts)

Specifications are subject to further technical development.

Developed, manufactured, qualified in Germany.

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LayTec AG
Seesener Str. 10-13
10709 Berlin, Germany

Tel.: +49 (0)30 89 00 55-0
Email: info@laytec.de
Web: laytec.de

Knowledge is key