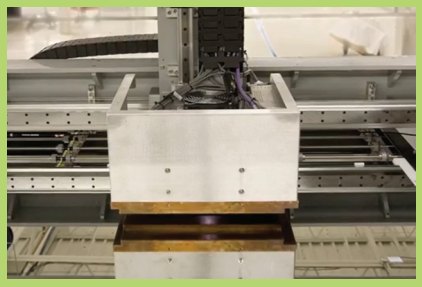
EDAX Smart Insight

AMETEK MATERIALS ANALYSIS DIVISION

Product Bulletin - XRF

XLNCE SMX-ILH In-line Analyzer



- Composition and thickness analysis
- Non-contact, non-destructive atmospheric measurement
- In-line and off-line process control
- Yield management
- Detailed individual product sampling
- Versatile measurement tool customizable to the production line

Application areas:

- Metal film stack composition such as CIGS
- Photovoltaic manufacturing process
- Micro-electronic manufacturing
- Corrosion resistance coating
- Thermal barrier coating
- Energy (CIGS, CIS, batteries)

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XLNCE XRF Analyzers for coating thickness and composition analysis

SMX-ILH: XRF Metrology Platform

The SMX-ILH analyzer is a versatile metrology tool designed for in-line, factory floor process control and yield management measurements. The ILH system provides non-destructive, non-contact, atmospheric analysis for composition and coating thickness measurement of rigid and flexible substrates. The configuration of the ILH system is flexible and adaptable to suit the available factory floor plan with various sample loading possibilities.

- Long or short side insertion
- Conveyor feed-through or shared entry/exit port
- Manual loading via sample tray

In addition, the ILH can be adapted to accept rigid panels and flexible substrates per production requirements.

Analysis of rigid panel subststrates is typically complicated by both bow and warp of the panels and the potential for the substrates being at high temperatures. The SMX-ILH system utilizes an automated measuring head adjustment to compensate for substrate bow and warp, optimizing the precision of measurements. The measuring head can also be outfitted with an optional, patented thermal shield, which facilitates real-time XRF measurements of substrates up to 300°C.

Communication and control of the SMX-ILH can be handled via a programmable logic controller (PLC) which serves to isolate the factory network from the instrument computer. PLCs are customizable based on the requirements of the factory installation. Open Platform Communication (OPC) standards are also available as an option.

The operating software of the SMX-ILH is designed for the production environment with a recipe format. An instrument supervisor can develop measurement recipes and a customized sequence of recipes to execute based on the factory's production schedule and specifications.

Specifications

X-ray tube

- 50 W, 1mA/50 kV µfocus tube Targets: W, Cr, Rh, Mo (other targets available on request)

Detector

- Maintenance-free Silicon Drift Detector (SDD)

Collimation

- 6 motorized & programmable

Primary filters

- 5 selectable & programmable

Camera

- Constant-view variable magnification

Optics

- 20x/40x Mag.
- 4 x 3 Field of View

Positioning

- Motorized, X-Y-Z programmable

Focusing Laser

- Optimal Measurement Reproducibility

Heat Shield

- Optional heat shield to measure substrates up to 300°C in real time

Software

Qualitative and Quantitative Analysis, including empirical and FP Quantification options

SMX-ILH Enhanced Features

Primary Filters

- Allow the primary X-ray beam output to be modified for increased precision measuring specific elements.

Laser Focusing

- Maintains precise sample-to-detector working distance for optimal measurement reproducibility.

X-Y-Z Programmable

- Programmable positioning increases tool throughput.
- Stored X-Y-Z recipes automate repetitive testing of multiple samples.

Quantitative Software

- Multi-layer analysis of 8 layers and up to 30 elements.
- Bulk quantitative analysis.
- Trace analysis for RoHS.

Virtual Analysis

- Three dimensional surface mapping for visual inspection of fine sample structures.

Statistical Tool

- Histogram, Trendline, X-Bar, and R-Chart display along with Mean, Std. Deviation, %Dev, Pp/Ppk, and Min/Max data charts.