

FUSION™ R2R

Automated Optical Inspection (AOI) System



FUSION™ R2R

Fusion. Nothing But the Truth.

Fusion™ R2R creates a true revolution in flexible PCB inspection performance. Utilizing breakthrough Multi-Image Technology™, Fusion™ R2R inspects a flex panel multiple times in one scan with exceptional detection accuracy. Designed for high-end FPC production, the system supports both roll-to-roll automation and sheet-by-sheet modes, while achieving the lowest cost per scan.

Benefits

Superior Detection Accuracy with Multi-Image Technology™

- Simultaneous acquisition of multiple images using different illumination sources
- Unmatched detection of the finest features
- Up to 70% false alarm reduction compared to conventional AOI results

Robust Performance

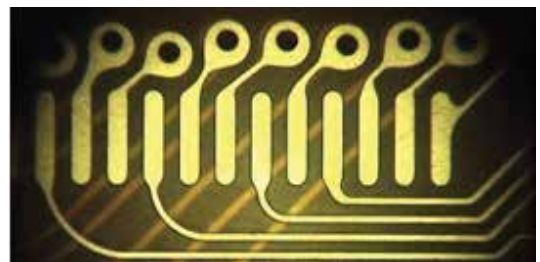
- Roll-to-roll automation and sheet-by-sheet modes
- Patented vacuum table to fit 250 mm and 500 mm roll width
- Resolution down to 25µm line and space
- Highest throughput at all resolutions

Intuitive Operation with Smart Setup™

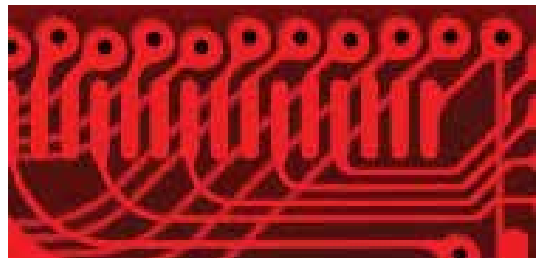
- Intuitive - visual categorization of true and false defects
- Short - a single cycle process (non-iterative)
- Optimal - automatic generation of all setup parameters

Major Running Cost Savings

- Lowest cost per scan with maximum production efficiency
- Minimum need of verification operation
- Less consumables, power and floor space



Microscope image



Red light image – Channel 1



Blue light image – Channel 2



Superior Detection Accuracy with Multi-Image Technology™

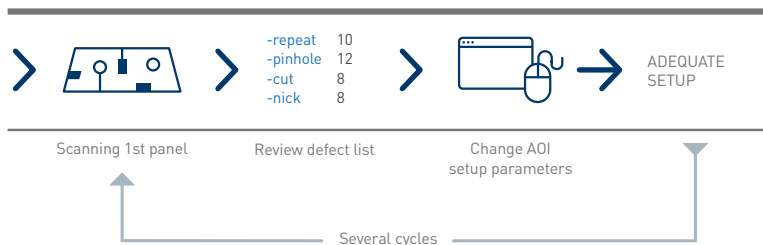
Featuring powerful Multi-Image Technology, Fusion™ R2R achieves a major reduction in false alarms of up to 70% compared to conventional AOI results. Its innovative optical head is specially-designed to accommodate a range of flexible PCB applications. A patented, dome-shaped light diffusing lens ensures uniform light coverage.

Unlike conventional, gray-scale AOI, Fusion™ R2R performs inspection using different lights and from different angles with a combination of red and blue color illumination channels, revealing details unseen by other systems. Illuminating the panel with different wave lengths makes it possible to accurately classify materials such as clean copper, oxidized copper, dirt and laminate. While two different defects might look the same under one illumination source, the true difference is revealed under another one. By accurately detecting the subtle differences between actual defects and false alarms, Fusion™ R2R achieves highest detection results without compromising on throughput.

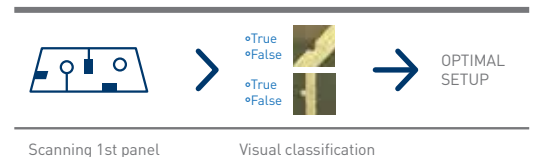
Intuitive Operation with Smart Setup™

Fusion™ R2R's Smart Setup™ transforms the traditional AOI setup process - from trial-and-error to a single cycle with minimized steps. Without the need for an expert, the operator can visually categorize true and false defects on the first panel of a job, then Smart Setup™ automatically does the rest. With Orbotech's advanced panel understanding capabilities, Smart Setup™ accurately categorizes the defects into groups and sorts the defects according to severity, from the most critical defect to the least. It then builds the optimal setup and automatically configures all relevant parameters accordingly. The result is intuitive, optimal and much shorter setup process that increases the AOI effective throughput.

Setup process with other AOIs



Smart Setup™ with Fusion



Flexible Solution

Supporting multiple production modes, materials and applications, Fusion™ R2R delivers expanded flexibility to handle a full range of production requirements. Using a patented vacuum table, the system ensures a firm grip on all panel types, including challenging bent and thin materials. With on-system verification capabilities, Fusion™ R2R provides fast and easy access to defects. For efficient mass production, the system can be seamlessly integrated with the panel handling automation of any vendor, in any configuration.