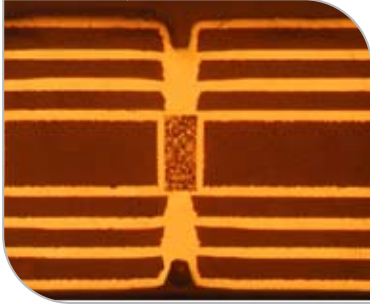


# *Paragon™ Family Laser Direct Imaging Solutions*



# Paragon™ Family

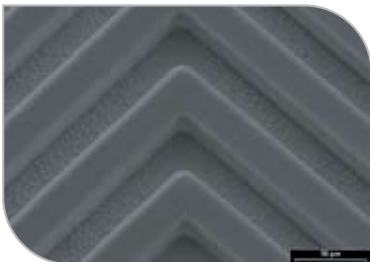
Orbotech's Paragon family of Laser Direct Imaging (LDI) systems provides powerful performance for imaging mass production of HDI, Flex and Rigid-Flex applications. Paragon leverages Large Scan Optics (LSO) Technology™, and a combination of high LDI throughput and registration accuracy for superior imaging results of even the most challenging PCB applications.



High accuracy leading to minimal offset between layers



High accuracy registration results in imaging smaller annular rings



Fine lines down to 25µm/1mil for advanced HDI designs

## Benefits

- Maskless imaging to save time, money and increase image quality
- Tight accuracy of  $\pm 12\mu\text{m}$  for high-end HDI designs
- Seamlessly automated with the vendor of your choice, in any configuration
- High depth-of-focus of  $\pm 300\mu\text{m}$  for single scan on Rigid-Flex
- Multiple traceability options on panels
- High resolution down to 25µm/1mil for advanced HDI designs
- Intuitive and user-friendly interface for fast and easy set-up



## No Mask

- Saves time: no need to plot any photo-tools
- Saves on photo-tool costs, including all labor and other costs associated with photo-tools
- Improves image quality: no contamination or damage from the photo-tool
- Reduces complexity by removing one process step

## Registration Accuracy

- Side-to-side registration: enables maximum accuracy of 24µm for inner layers
- Annular ring: with  $\pm 12\mu\text{m}$  accuracy, microvias can be stacked with greater precision
- Tight solder mask clearance and wider solder dams possible

## Depth-of-Focus (D.o.F)

- D.o.F. up to  $\pm 300\mu\text{m}$  for overcoming most the challenging surface topography issues
- Single scan for Rigid-Flex, allows uniform imaging of the entire panel

## Seamless Automation

- Fully automated panel handling
- Optimized utilization of machine capabilities
- No damage from panel handling
- Maximum flexibility of configuration and choice of automation vendor

## Traceability

Enables panel tracking and distortion feedback by adding to each panel alphanumeric, 1D barcode or 2D barcode (DMC-Date Matrix Code):

- Serial number stamp
- Date and time stamps
- Scaling stamp
- Machine ID



## Resolution

Lines and spaces down to 25µm/1 mil

## Ease-of-use

- Intuitive and user friendly interface for fast and easy set-up
- Recognizes a wide array of different target types
- Option for target generation with integrated UV marker system
- Uses conventional resists - no need for special LDI resist

## Dynamic Imaging Modes

- Adjustment per panel: each individual panel can be scaled according to its own distortion
- Different scale factors in one panel: a panel can be subdivided for scaling purposes
- User feedback: the results of each image can be used to improve future image results

