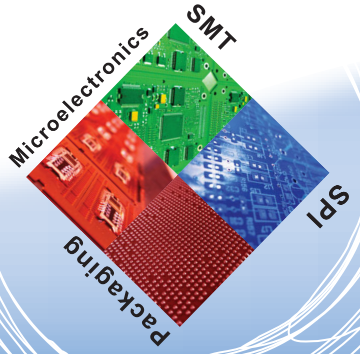
MACHINE VISION PRODUCTS



The Full Spectrum of AOI Solutions

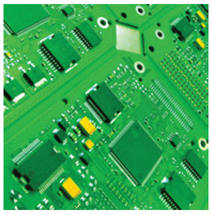
Microelectronics and Semiconductor Inspection - 850G

The **850G** modular AOI Inspection platform provides a range of advanced optic and handling solutions including 3D, high-resolution imaging and quad color lighting. Camera resolutions are scalable to resolutions below 1 Micron. In addition a range of custom material handling configurations are available including; magazine handling, strip handling, tray handling and wafer handling. For in-line operations, single and dual lane options are also available to process microelectronic or semiconductor assemblies.

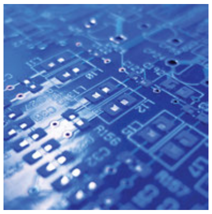
Our configurable electro-optics solutions provide performance inspection capabilities for:

- **Die Placement Metrology**
- **Wire-bond, Lead-frame**
- **BGA and Packaging**
- **Underfill**
- **3D Paste and 2D Flux**
- **Silver Epoxy, Bond Layer**
- **Bump Inspection**
- **Epoxy, Glues and Sealants**
- **SMT Components**
- **Foreign Objects and Scratches**
- **Material Dimensional Metrology**

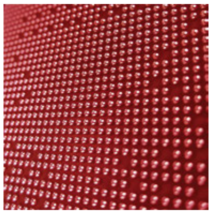
Discuss your SMT and Microelectronics inspection application with Machine Vision Products, Inc and discover your solution



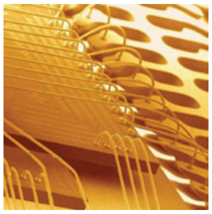
SMT AOI



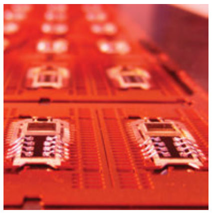
3D Paste AOI



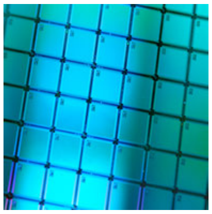
BGA AOI



Wire Bond AOI



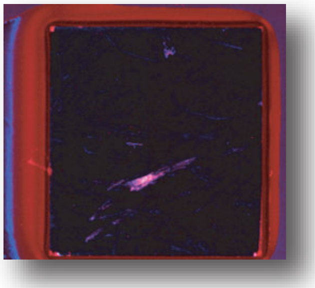
Die and Epoxy AOI



Die Surface AOI

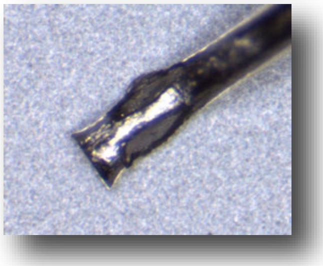
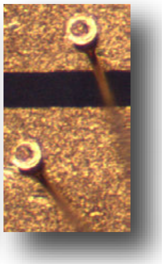
Machine Vision Products, Inc., 3270D Corporate View., Vista, CA 92081
phone (760) 438-1138 . fax (760) 438-0660 . sales@machinevisionproducts.com . www.machinevisionproducts.com

Die Placement, Surface Finish and Scratches



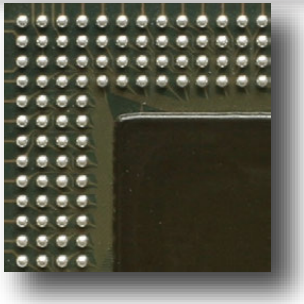
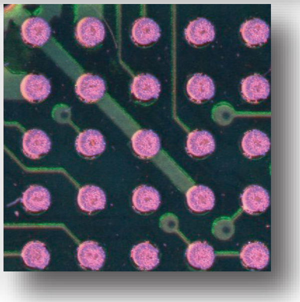
- Surface Damage such as Scratch, Exposed Circuitry
- In-line High Speed Positional Accuracy of Die Placement (X, Y and Rotation) Post and Pre Cure/Reflow
- Solder Splatter and Foreign Objects, Cracks, Contamination and Edge Quality
- Single and Multiple Die

Wire-bond, Lead-frame Inspection

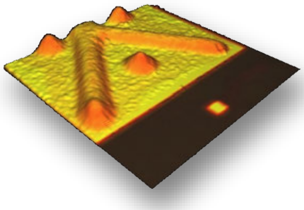
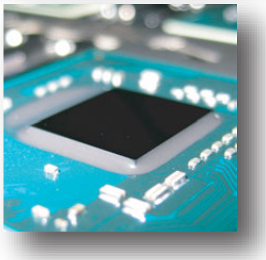
- Wire Tracing Conformity, Bent and Broken Wires
- Distance to Adjacent Wire, Straightness Tolerance
- Ball/Wedge Geometry
- Contamination
- SMT Assembly Defects

3D BGA, Bump and Paste Inspection

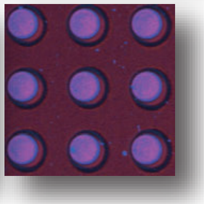
- In-line High Speed Inspection of 3D Heights
  - Coplanarity
  - Positional Accuracy
  - Volume
  - Height

Epoxy and Underfill Inspection

- Epoxy Boundary (Flow and Spread)
- Epoxy Fillet (Quality and Defects)
- Excess Epoxy (Anywhere in the Inspection Area)
- Pre and Post Epoxy Cure
- Bond Layer

Additional Inspection Capabilities

- Full SMT Inspection Capabilities
- Part Routing
- 2D Flux Inspection without Florescent Additives
- Flux Boundary and Coverage (Flow and Spread)
- Part Height and Dimensions
- Part Markings, OCV and 2D Barcodes

The Full Spectrum of AOI Solutions

MVP Microelectronics and Semiconductor Systems

CORE ENGINEERING

- Custom Designs
- Co-engineering
- Product Definition
- Unique Handling Designs
- Development Support
- Optics Experts
- Software Design
- Mechanical Design
- Mechanical Design
- Project Management
- Standards

SYSTEM MANUFACTURING

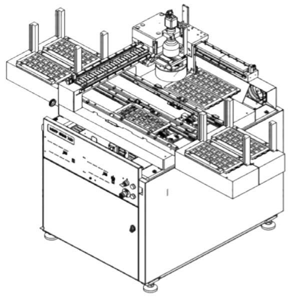
- Part Manufacturing
- CNC Capability
- System Manufacturing
- Custom Systems
- Skilled Engineering
- System Integration
- Copy Exact
- Documentation Control
- Shipping
- Electronic and Mechanical Assembly
- 100% Testing

APPLICATIONS

- Full Metrology
- Die Placement
- Wire Bonding
- Bump Inspection
- BGA Measurement
- Wafer Surface
- Particle Inspection
- Underfill
- 3D Measurements
- Solder Measurements
- Bump Inspection
- Clean Room
- SMD placement

CUSTOMER FOCUS

- Co-Development
- Meet Your Requirements
- Local Support
- Installation
- Project Management
- Field repairs
- After-Sales Service
- On-Site Applications



CORE ENGINEERING

High quality products start with good design. Machine Vision Products (MVP) brings added value to the customer by providing design and engineering services to meet your custom Microelectronics and Semi-conductor inspection requirements.

SYSTEM MANUFACTURING

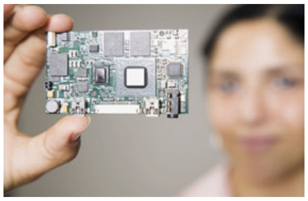
Based in Carlsbad, California, MVP provides full design and manufacturing services for all their optics, hardware and custom handling solutions. Our skilled machine operators, assembly and test engineers provide the highest quality system solutions. In addition MVP provides software for all of the platforms from a core team of algorithm experts based in our Carlsbad location.

MVP's Inspection Toolbox

Metrology	Real-time Feedback	Wire height	Die Metrology	Die Cracks
Positional Accuracy	Part Routing	Epoxy Volume	Foreign Materials	Solder Splatter
Wire Bond	Die Tilt	Under fill	Wire Position	Polarity
Height Measurements	Silver Epoxy	SPC	Paste Volume	Part Markings
SMT	Rotation Measurements	Die Edge Cracks	Custom Measurements	Real-time Feedback

APPLICATIONS

MVP's proprietary algorithm suite provides the highest level of inspection for integrated automatic production lines; built around a series of high resolution 2D and 3D optics packages, to provide rapid, cost-efficient measurement of microelectronics and semiconductor components.



CUSTOMER FOCUS

Once a solution has been deployed, MVP continue customer and applications support through a class-leading team of field based engineers. System installation, training, applications development, project management and system enhancements are all services provided by MVP to any location world-wide.

The Full Spectrum of AOI Solutions

The 850G is the latest in a series of flexible, powerful and innovation driven solutions introduced by MVP, the leader in performance based AOI. With the flexibility to inspect a variety of micro-electronics processes, the modular nature of the 850G is an ideal fit for performance driven production environments.

850G Technical Specifications

Inspection Speed

- Acquisition Speed of 75 Megapixels per Second with a Single 5MP Camera
- High UPH, 4-10 x process UPH's
- High-Speed 3D Laser for Height Measurements
- Highest Speed, 3 Channel 3D Camera Technology Available

System Hardware

- Granite-based Stage for High Measurement Accuracy
- State-of-the-art Large Format Color Camera
- Proprietary "On-the-fly" Camera Acquisition
- Programmable Variable LED Strobe Lighting
- Proprietary Multi-color Illumination
- Patented 3D Technology, 2 or 4 Micron
- Field of View, Resolution, 1 - 25 Micron/Pixel
- Copy-exact, Inter-machine Capability

System Software

- CAD-driven, Library-based Programming Software
- Proven High Performance, Adaptable Algorithms with Highest Detectability and Lowest PPM False Accept and False Reject Rates
- Full Network Integration (TCP/IP, NFS Protocol)
- Off-line or In-line Defect Review Capability
- Defect Image Archive Capability
- Real-time SPC Package and XML Reports
- Report Generation Utilities for Production Inspection Measurements
- Inspection Program Change Tracking
- On-the-fly Unit Level and Carrier Tracking with 2D Matrix Reader
- 5th Generation Proven Inspection Software
- Multi-pass Technology, Adjustable Lighting Intensity
- Multi-substrate Step and Repeat Programming and Inspection Capability

Material Handling

- Custom Handling Options
- SMEMA Interface
- Auto Board Clamp for Precision Registration
- Single and Dual Lane In-line Options
- Support for Metal Carriers and JEDEC Standard Trays
- Platform Loaders and Magazine Lifter Options

Physical Specification

- Inspection Envelope 355 x 355mm (14 x 14")
- Footprint 844 x 1066mm (33.25 x 42")
- Height 1473mm (58")
- Conveyor Length 850mm (33.46")
- Power 220-240VAC 50/60Hz, 10 Amperes
- Air 60 PSI, 1CFM
- Weight 680kgs (1500 lbs)

Options

- SECS/GEM Interface
- CAD Translation Software
- Offline Programming Capability
- MVP Dynamic Process Control
- Ceramic Process Material Handling

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