



# A Natural Born Defect Hunter for Finished Wafers

- Detection of micron-level defects
- Synergistic surface inspection and 3D metrology
- High throughput for 100% inspection



# Falcon – The Defect Hunter

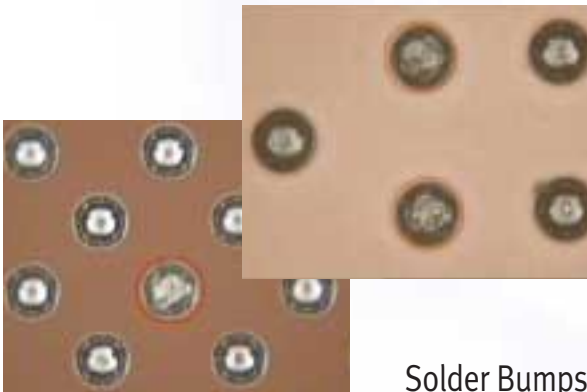


Falcons are nature's fastest birds. Their acute eyesight and flying skills enable them to capture their target in mid-air. Trained falcons have been used for hunting by royalty since early ages.

Camtek's Falcon offers similar qualities: Keen vision to detect minute defects, and the speed to do it in rapid motion. But training our Falcon is much easier.

## Performance Highlights

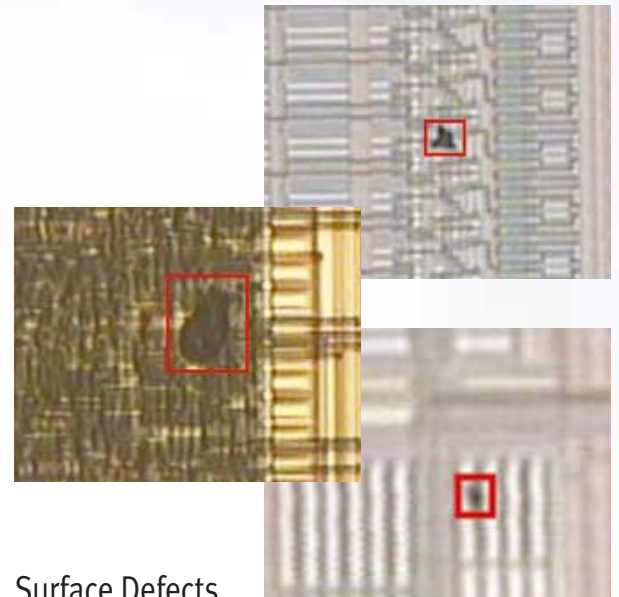
- Superb electro-optics provide reliable detection of micron-scale, low contrast defects
- Programmable multiple magnifications deliver an optimal combination of resolution and throughput
- On-the-fly image grabbing enable unprecedented scanning speed
- Combined 2D and height measurement in a single system for comprehensive 3D dimensional analysis
- Two height sensors: Confocal Chromatic (CCS) or Laser Triangulation (LTS) offer sub-micron precision and high throughput



Solder Bumps



Gold Bumps



Surface Defects

# for Your Finished Wafers

Different users define different detection criteria. The ability of the optical inspection system to discern between a critical defect and a false alarm, strongly depends on the correct setup of the system for the specific application.

The Falcon assures reliable detection for each application by providing simple and friendly setup tools:

## Off- line Recipe Preparation:

- Increases system utilization
- Supports recipe portability between systems
- Define various detection zones using advanced graphical aids and image processing tools
- Define inspection rules and detection sensitivity parameters per zone

## Wafer Map Manager:

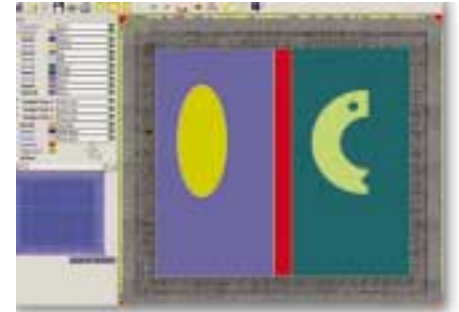
- Import and Review upstream wafer map files
- Generate and edit wafer map files
- Update upstream wafer map files

## Statistical Process Control Package:

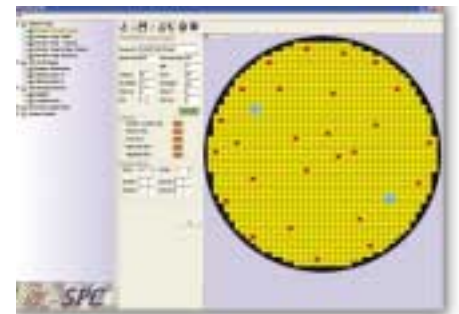
- On- line and off- line
- Yield Wafer maps
- Histograms
- Reports
- Filters

## Defect Review:

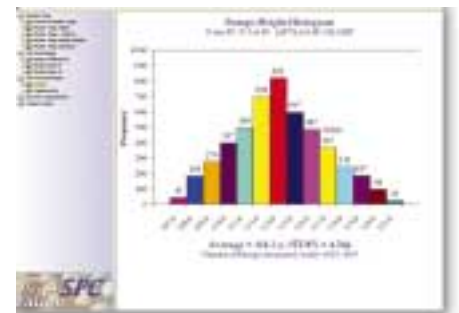
- On- line on Falcon
- Virtual Off Line
- Stand alone Verification station



Off- line Recipe Preparation



Wafer Map Manager



Statistical Process Control Package



Probe Marks



Defect Review

<b>Inspection Capability</b>  <b>Wafer Types</b> <b>Bumps Materials</b> <b>Bumps Shapes</b> <b>Material Handling</b> <b>Wafer size</b>	<ul style="list-style-type: none"> <li>• Surface, Probe Marks and Ink Dot Inspection; Bump and Pads 2D and 3D dimensional analysis</li> <li>• Wafer-level packaging, bumped, post-probing, finished and blank wafers</li> <li>• Solder, Gold</li> <li>• Spherical, Stud, Coined, Pre &amp; post reflow</li> <li>• Standard cassettes. FOUP optional</li> <li>• Models for 100 to 200 mm (4 to 8 inch); 300 mm (12 inch)</li> </ul>			
<b>Surface (2D) Inspection Performance*</b> <b>Surface Critical Dimensions (µm)</b> <b>Shape Violation (%)</b> <b>Position (µm)</b> <b>Min. Defect Size (sq. µm)</b> <b>Max. Throughput (wph)</b>	<b>Accuracy</b> 1 1.5 2		<b>Repeatability (@ 3 std)</b> 0.6 1 2	
<b>3D Measurement Performance*</b>  <b>Bump Height (µm)</b> <b>Co-planarity (µm)</b> <b>Volume Deviation (%)</b>	<b>Accuracy</b> Confocal Chromatic Sensor (CCS) Laser Triangulation Sensor (LTS)		<b>Repeatability (@ 3 std)</b> Confocal Chromatic Sensor (CCS) Laser Triangulation Sensor (LTS)	
<b>Height Measurement Range (µm)</b>  <b>Max Throughput (wph)</b>	Confocal Chromatic Sensor (CCS) 215 1 (at 100K bumps per hour)		Laser Triangulation Sensor (LTS) 350 (Wider range optional) 13	
<b>Set up</b> <b>Typical setup time (min)</b> <b>Setup Assistance Tools</b>	<b>On Line</b> 15 Automatic “gold die” generation from production wafer. Importing external die data		<b>Off Line</b> 30 Off line recipe preparation, including die parameters, exclusion zones and detection parameters per zone	
<b>Review and Verification</b> <b>Inspectify™</b> <b>Virtual Off Line</b> <b>Verification Station</b>	<ul style="list-style-type: none"> <li>• On line using high resolution live B&amp;W and True Color video cameras</li> <li>• Off-line review of transferred image and data</li> <li>• Stand-alone station for on-line review of live image with transferred data</li> </ul>			
<b>Inkless Assembly Technology (Wafer Map)</b> <b>OCR</b> <b>Ink Marker</b> <b>CSPC</b>  <b>Yield Maps</b> <b>Histograms</b> <b>Reports</b> <b>Filtering</b>	<ul style="list-style-type: none"> <li>• Generate, import, edit and export wafer map in Semi G85 and other industry standard formats</li> <li>• Automatic reading of wafer ID (alpha numeric, dot matrix and barcode)</li> <li>• Automatic marking of reject die</li> <li>• Camtek Statistical Process Control SW Package for on-line and stand alone installations</li> <li>• Wafer maps per user-defined yield criteria</li> <li>• Distribution charts of all 2D and 3D metrology and surface defect results</li> <li>• Analysis by lot, wafer and die levels</li> <li>• Defects classification and filtering by dimension</li> </ul>			
<b>Clean Room Compatibility</b> <b>Dimensions (Falcon 200 mm)</b>	<ul style="list-style-type: none"> <li>• Class 100</li> <li>• 2100 x 1120 x 1450 mm, (WxDxH); 820 Kg</li> </ul>			

\* Performance data may vary between applications

Repeatability: The dispersion of repeated readings, expressed as 3 standard deviations (sigma) of the sample.  
 Accuracy: The deviation of the mean system reading from the known reference value.

