Hologenix Magic Mirror™

Full Wafer Submicron Defect Detection Systems

www.hologenix.com
• Dimples and depressed areas show up as bright spots

• Mounds and raised areas show up as dark spots
Optical Technique

• Halogen Lamp with Band-Pass Filter

• Series of Lenses Create Broad Beam Collimated Light Column

• Parallel Rays of Light Reflect Perpendicular to the Polished Surface – Min. 3% reflectivity required

• Reflected Rays Projected onto De-focused CCD Detector.
**Magic Mirror™ Method**

**Magic Mirror™ Optical Imaging Principle**

Reflected image resulting from concavity

**Magic Mirror™ Optics Schematic**

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Hologenix YIS-200SP Magic Mirror™
2, 3 or 4 Cassette Wafer Surface Inspection Systems

- Automatic Defect Detection with Hologenix ADDS Image Processing Software
- Detection Sensitivity better than 0.05 Micron Depth with <1M-100M Radius of Curvature using the Proprietary Magic Mirror™ Method
- Defect Size Range: 0.4 μm height difference over a 10 mm lateral distance to 0.05 μm over a 0.5 mm lateral distance
- Adjustable Defect Detection and Classification Recipes
- Non-Contact Notch, Flat-Finding and Centering Technology
- 150-200 mm Wafer Inspection
- Throughput: Approx. 150-180 Wafers per Hour
- 2, 3 or 4 cassettes or SMIF pods
- Class 1 Clean Room Compatible
- Windows 7 Environment
- Standalone Sorter Capability with optional OCR

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300mm Magic Mirror™ YIS-300SP
Defect Detection System

- Detection Sensitivity better than 0.05 Micron Depth
- Full View and 4X Zoom
- 150-300 mm Wafer Sizes
- Adjustable Sensitivity
- Adjustable Intensity
- Manual Loading
- Rotating Wafer Chuck
- Broad Beam Illumination with Narrow Band-Pass Filtered White Lamp
- Defect Detection and Image Enhancement Software
300mm Magic Mirror™ YIS-300SP-2
Automated Defect Detection System

- Detection Sensitivity better than 0.05 Micron Depth
- 13 or 25 Wafer Capacity FOUP or Open Cassette
- Class 0.1 Mini-Environment
- 200-300 mm Wafer Sizes
- Edge Grip Wafer Handling
- Optional Non-contact Notch Finder
- SECS II - GEM
- Optional OCR
- Windows Based Defect Detection Software - ADDS
Advanced Automation Control and Defect Detection Software

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Automatic Defect Classification

Dimples, Mounds, Flaws, Flares, Edge Dimples, etc.
The Magic Mirror™ is useful for detecting problems with many types of wafer processes:

- Polishing
- Epitaxy
- Oxidation, Diffusion, CVD
- Post Implant Annealing, RTP
- CMP
- SOI
Polishing Scratches
Dimples and Wax Defects
Dimples and Flares
Dimples and Wax Flaws
Automatic Dimple Detection

![Diagram showing a wafer with detected dimples and a table listing defect details.]

- Small Dimple
- Large Dimple
- Nonfound Dimple

Dimple Results [Dimp4]
- Wafer FAILED: 004 defects found.
- Dimple: 004 defects.
  - Defect 001 size: 0027 x=121 y=410
  - Defect 002 size: 0105 x=229 y=329
  - Defect 003 size: 0100 x=231 y=266
  - Defect 004 size: 0049 x=119 y=230

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Mound
Polishing Defects
SOI (Bonded)
Back-Side Grinding
Good Wafer