Art of 3D Technology

Uncompromising and leading solutions

1st World First KOH YOUNG

ZENITH

World-First Full 3D Automated Optical Inspection

Zenith brings a revolution to SMT process control, based on the world's best full 3D measurement & inspection by visualizing, identifying and eliminating root cause of defects.

- Perfect Full 3D Inspection Performance
- Fast and Intuitive Programming
- 3D Data based SMT Process Control System

Koh Young Technology
INTELLIGENT INSPECTION

ZENITH

World-First Full 3D Automated Optical Inspection

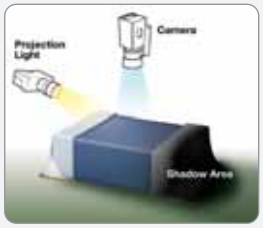
> The ZENITH FULL 3D AOI system measures the true profilometric shape of components, solder joints, patterns and even foreign materials on assembled PCBs, overcoming the shortcomings and vulnerabilities of 2D AOI.

Authentic Full 3D Measurement Capability

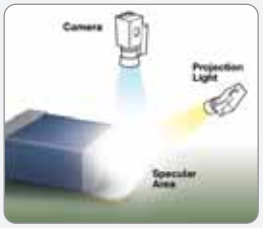
Koh Young provides the only solution to all problems inhibit true 3D inspection capabilities, such as various types of shadow/specular problems due to complex environment on assemble PCB.

- Unique 8 Way Projection Technology for full 3D measurment based inspection
- *Patented Multi-Frequency Moiré Technology to ensure metrology accuracy for wide measurement range from solder joint to tall components
- Full color RGB illumination for perfect 2D inspection

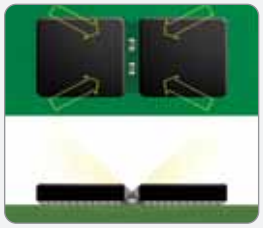
conventional inspection problems



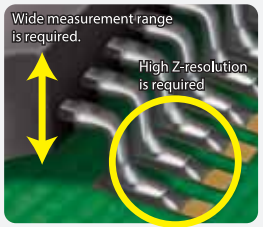
Shadow Problem



Specular Reflection



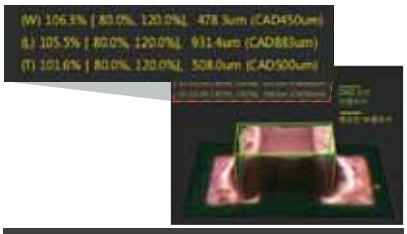
Tall Obstacles Problem



Measurement Range Problem

Fast and Intuitive Programming · Inspection Condition Setting

- Quantified inspection condition setting based on 3D measurement data
- Removal of uncertainties of production control by inspection result quantification
- Inspection condition recommendation by component
- Easy component addition/deletion/copy modification using JOB manager



Quantified inspection condition based on measurement data

Inspection condition recommendation by component

Component condition recommendation

Inspection Program Management Automation

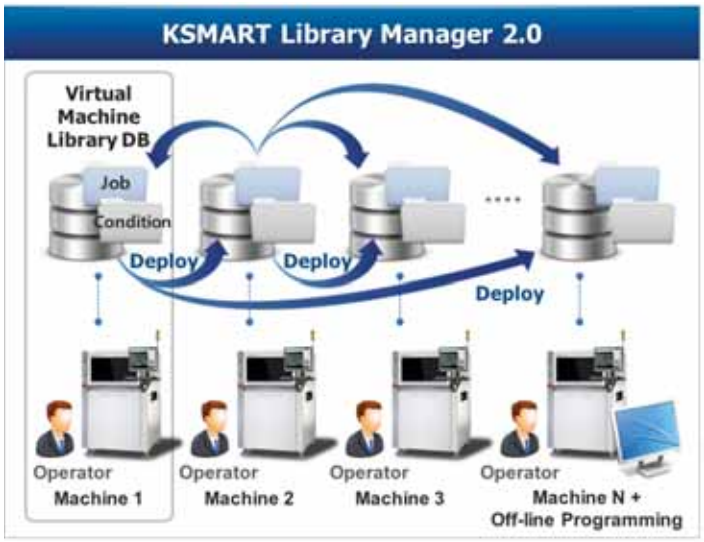
Quick and Easy Data Sharing

JOB files containing quantified inspection conditions, OCV/OCR images and nonstandard components are shared with all installed KY AOI systems by KSMART Library Manager 2.0.

Maximization of Data Utilization

Performance of Zenith is not interrupted by line and machine differences, and PCB environment such as color and material. The Inspection program shared by KSMART Library Manager 2.0 does not need additional fine tuning and can be applied directly.

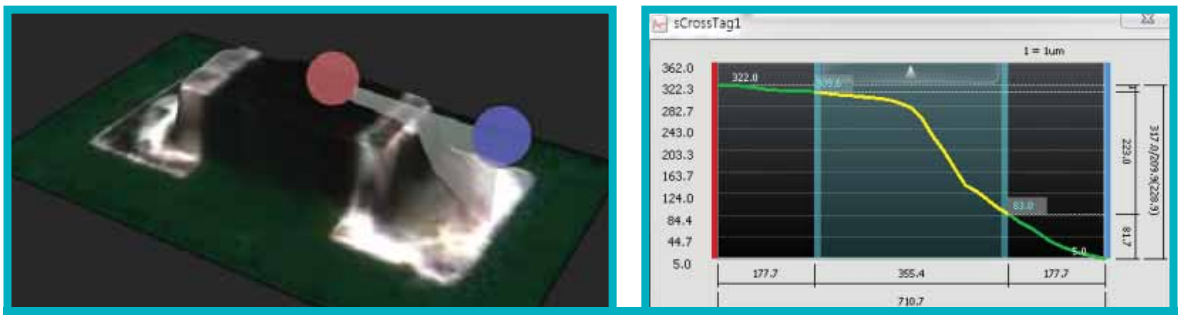
KSMART Library Manager 2.0



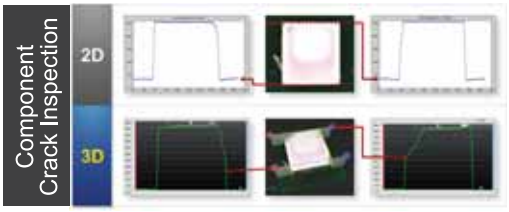
Perfect Full 3D Inspection Performance

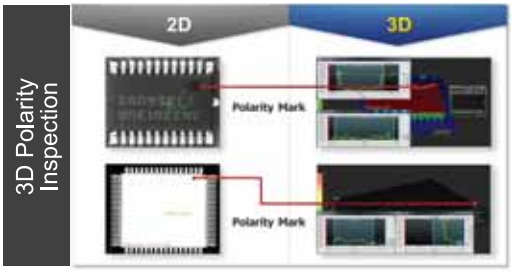
Measurement based Inspection

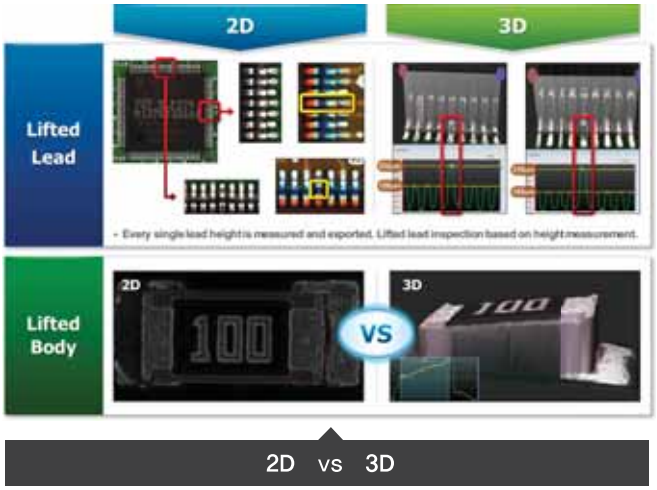
- Good/NG Decision based on true measurement data without additional side camera
- 3D measurement data from 3D SPI, Pre-Reflow 3D AOI, Post-Reflow 3D AOI enables quantified Good/NG judgments, which are used for process optimization.



Solder Joint 3D Measurement



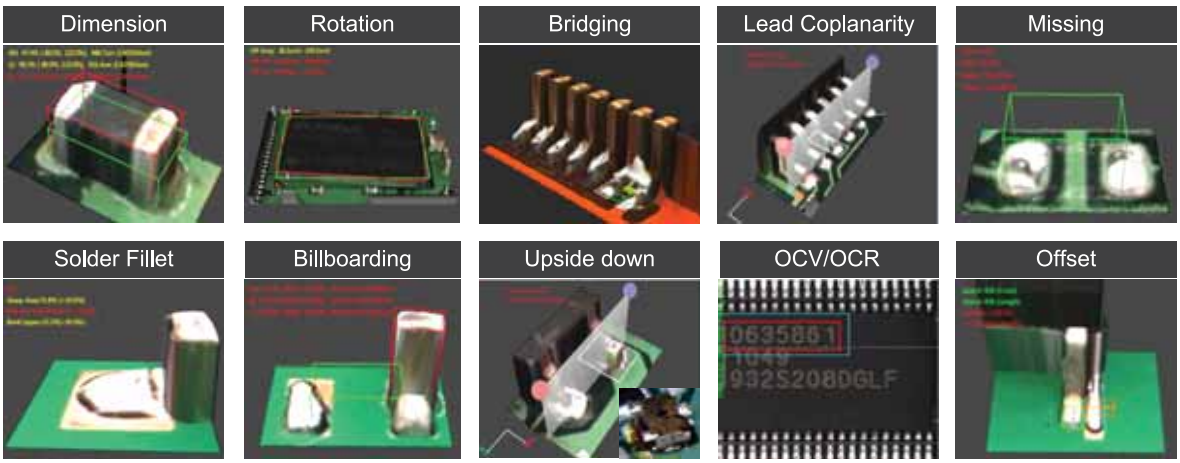




2D vs 3D

Measurement and Inspection of All Kinds of Defects

- Detecting all kinds of defects including Missing, Offset, Rotation, Polarity, Upside down, OCV/OCR, Solder fillet, Billboarding, Lifted Lead, Lifted Body, Tombstone, Bridging and more.



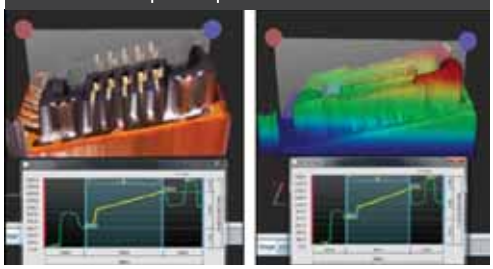
Warp Compensation

Perfect PCB Warp Compensation Solution

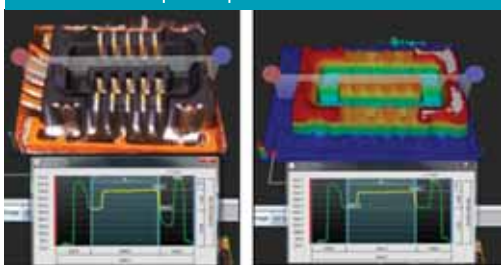
Warp problems of big-sized PCB and FPCB after reflow seriously affect production quality.

- **Minimization of False Call**
  : Koh Young's Warp Compensation provides a revolutionary solution to PCB warpage

Warp Compensation **Before**



Warp Compensation **After**

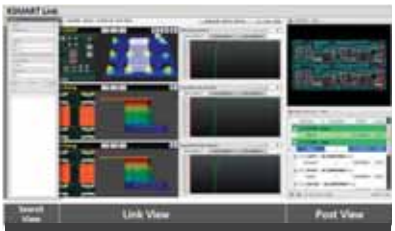


KSMART LINK

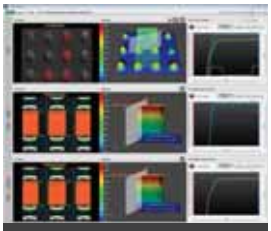
KSMART Link

Optional

- Process control data, provided by Koh Young's full 3D SPI and AOI are stored and shared in DB real time
- Software tool that monitors and analyzes defects and root cause of defects



KSMART Link



KSMART Review

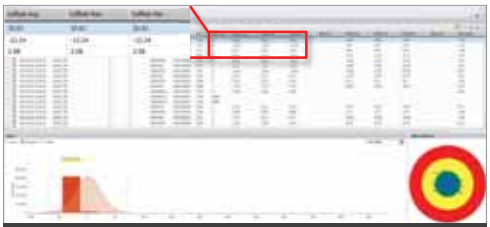
SPC Statistical Process Control

SPC Pro

Optional

- SPC Pro provides various process analysis tools such as yield rate, NG analysis, PPM analysis, Gage R&R, offset analysis, and more
- Customizable drill-down scenario

Scenario Setting Window



Offset Analysis

Gage R&R Analysis

Defect Frequency and Type Analysis

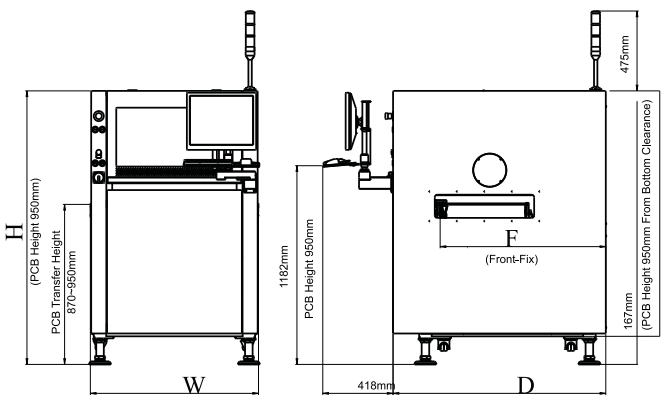
Must-check Requirements of 3D AOI System

Requirements	Solutions
Shadow Problem Solution	• 3D Shadow Free Moiré Technology & 8 Way Projection
Specular Problem Solution	
Shadowed Area between Tall Components	
Small (01005 inch) Component Inspection	• Multi-Frequency Moiré Technology
Wide Measurement Range + Accuracy (Measurement Range Problem)	
Real Time PCB Warp Compensation	• Warp Compensation (Pad Referencing + Multi-Frequency Moiré Technology)
Dark Component & White Body Component Location	• Full 3D Measurement
Component Body, Lead Coplanarity Inspection	
Solder Joint Profile Inspection	
3D Polarity Inspection	
Component Crack Inspection	

Inspection Items	Inspection Task	• Missing, Offset, Rotation, 3D Polarity, Upside down, OCV/OCR, Coplanarity, Solder fillet, Lifted lead, Billboarding, Tombstone, Bridging, Dimension	
Inspection Performance	Camera Resolution	15μm	20μm
	FOV Size	30×30mm (1.18×1.18 inch)	40×40mm (1.57×1.57 inch)
	Full 3D Inspection Speed	18.3~30.4 cm²/sec (Inspection speed varies by PCB, and inspection condition.)	
	Height Accuracy (on KY Calibration Target)	• ±3%	
	Camera	• 4M Pixel High Speed Camera	
	Illumination	• IR-RGB LED Dome Styled Illumination	
	Max. Measurement Height	• 5mm	
PCB Handling	Conveyor Width Adjustment	• Automatic	
	Conveyor Fix Type	• Front / Rear Fixed (factory setting)	
Software	Supported Input Format	• Gerber data (274X, 274D), ODB++, Placement file, Mounter JOB file, Allegro, Zuken, Mentor (optional)	
	Programming S/W	• ePM-AOI	
	Statistical Process Control Tool	• SPC Pro • Review Station • KSMART Remote Monitoring System	
	Operator User-friendliness	• KSMART Library Manager 2.0 • KYCal: Auto Camera Calibration, Auto Illumination Calibration, Auto Height Calibration	
	Operating System	• Intel i7-3970X (6Core), 32GB, Windows 7 Ultimate 64bit	
Add-on Solutions	• 1D & 2D Handy Barcode Reader • 1D & 2D Inline Barcode Reader • Offline Programming Station • Offline SPC Pro Station • Standard Calibration Target	• KSMART Remote Monitoring System • Warp Compensation • Foreign Material Inspection • Review Station	

※ Above specifications are subject to change without notice.

	M	L	DL	XL
Max. PCB Size	330X330mm (13X13 inch)	510X510mm (20X20 inch)	Dual: 510X320mm (20X12.6 inch) Single: 510X580mm (20X22.8 inch)	850X690mm (33.4X27.1 inch)
Min. PCB Size	50X50mm (1.97X1.97 inch)			70X70mm (2.7X2.7 inch)
PCB Thickness	0.4~5mm (0.015~0.20 inch)			0.5~8mm (0.02~0.31 inch)
Max. PCB Weight	Ring Belt : 2Kg(4.4 lbs), Timing Belt : 5Kg(11 lbs)			10Kg(22 lbs)
Machine Weight	550Kg(1212 lbs)	600Kg(1322 lbs)	700Kg(1543 lbs)	850Kg(1874 lbs)
Bottom Side Clearance	50mm(1.97 inch)			
Supplies	200-240VAC, 50/60Hz Single Phase, 5Kgf/cm²			
W	820mm(32.2 inch)	1000mm(39.3 inch)	1000mm(39.3 inch)	1350mm(53.1 inch)
D	1265mm(49.8 inch)	1265mm(49.8 inch)	1445mm(56.9 inch)	1445mm(56.9 inch)
H	1627mm(64 inch)			
F	985mm(38.7 inch)		1165mm(45.8 inch)	



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