

The Advancing Edge of 3D SPI



ASPIRE 2

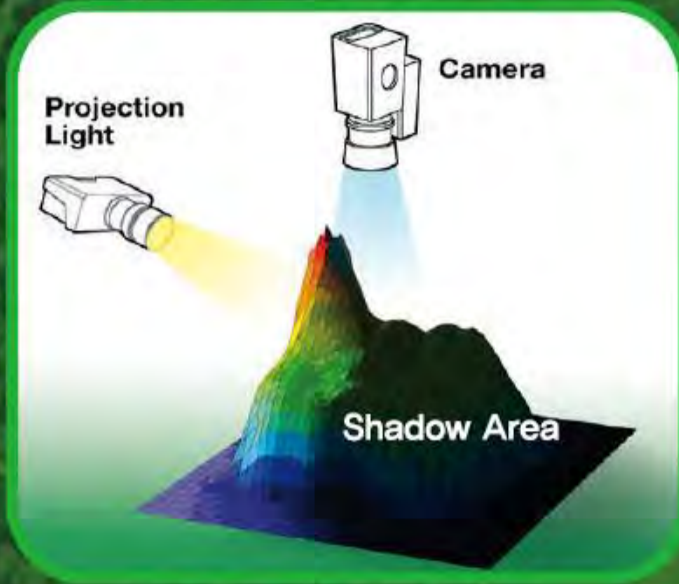


**KOH
YOUNG
TECHNOLOGY**
INTELLIGENT
INSPECTION

**Measure to Optimize:
A Complete 3D Inspection Solution**

aSPIRE 2

Conventional SPI Bottlenecks



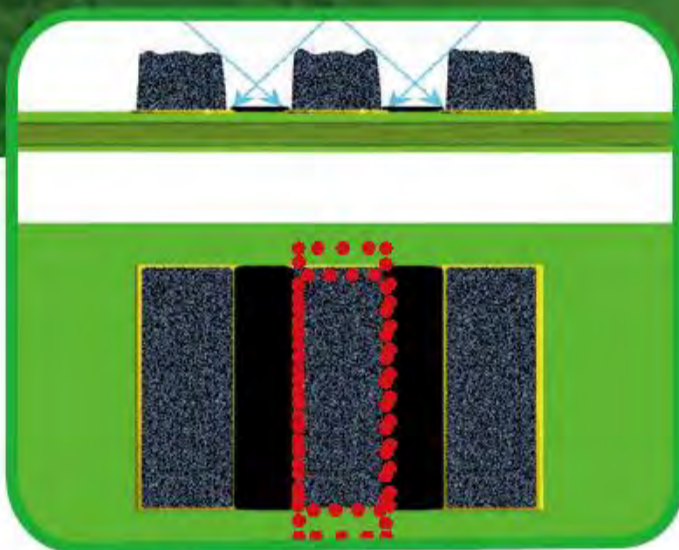
Shadow Problem

With single sided projection, all irregularly-shaped objects have shadowed areas that can result in imprecise measurements



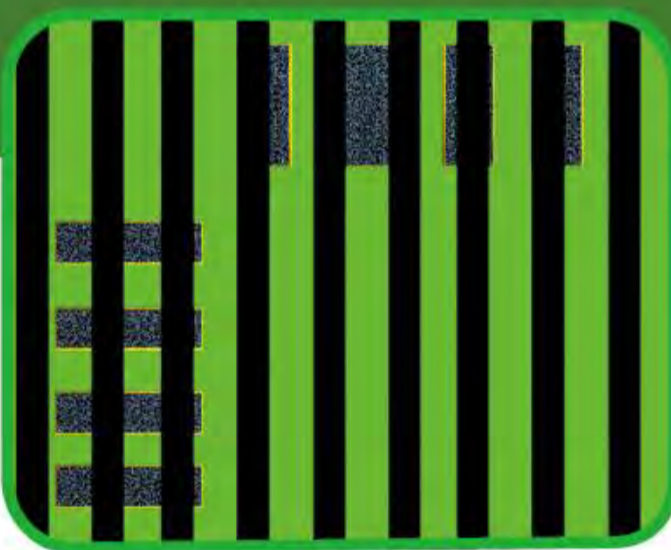
Specular Problem

With single sided projection, light reflected back into the camera from areas near the light source causes sensor saturation.



Reference Plane Shadow Problem

With finer component pitch, measurement data become less reliable due to a lack of information from the reference plane.



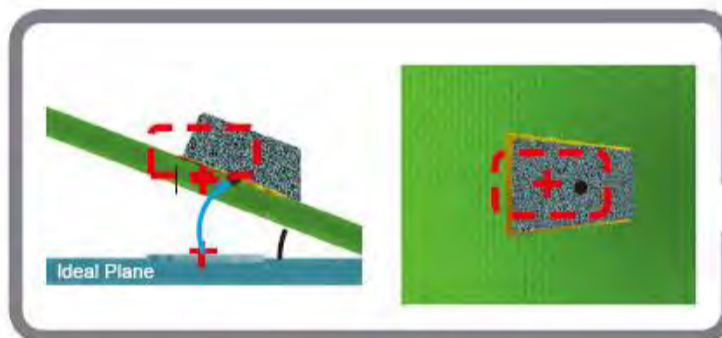
Directional Problem

Paste deposits in the same line of direction as projection have less resolution than perpendicular ones.

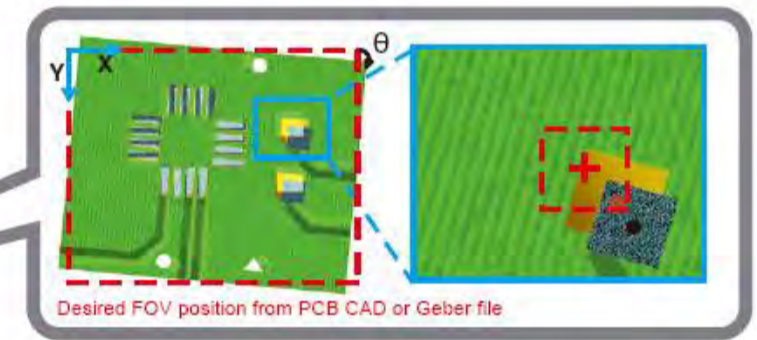
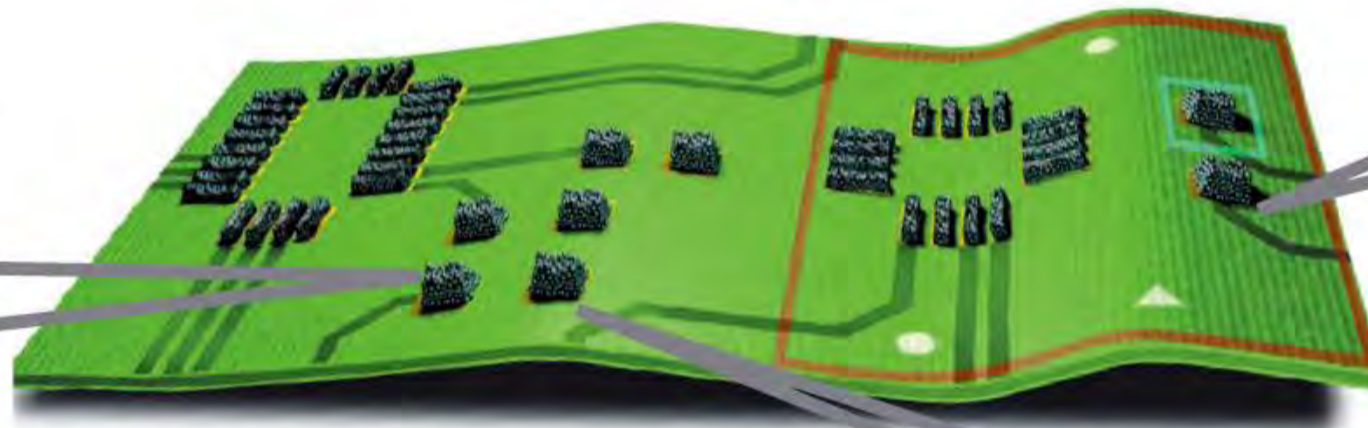


Using patented 4-way projection technology, aSPIRE 2 provides the unique solution for reference plane shadow and directional problems. It's also an advanced solution to conventional shadowing and specular issues.

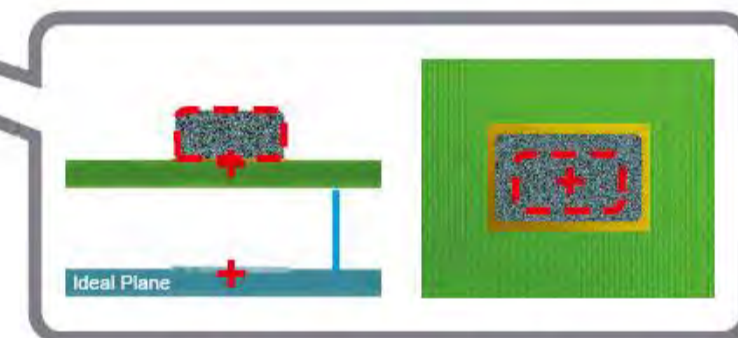
PCB Warp Can Cause Inaccurate Measurements



Shape change due to board slope



X, Y, θ misalignment caused by board rotation and shrinkage or expansion of the board



Size change due to height difference from the ideal plane

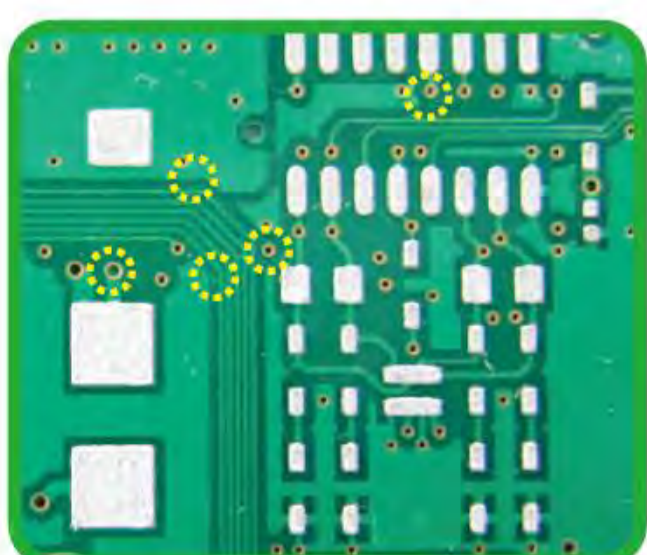
Koh Young's Innovative 3D Solution for PCB Warp

Z-tracking Technology

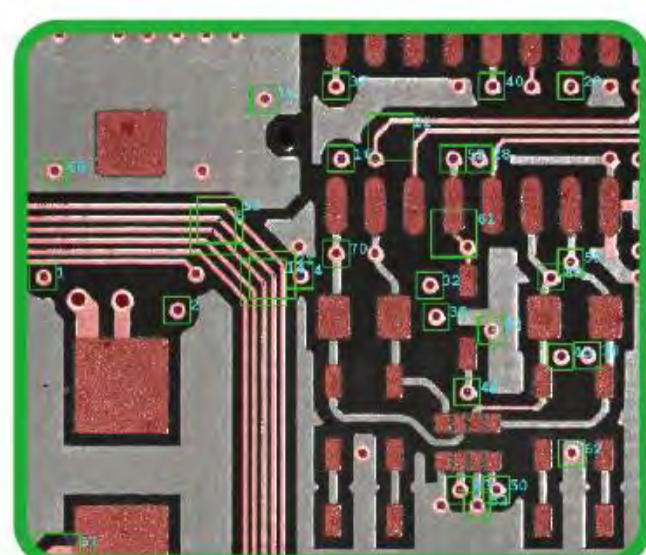
*Multi-frequency height measurement technology enables real-time measurement and compensation of board warp, with respect to the ideal plane. True Color PCB Warp images with measurement data are provided online in real time.

Pad Referencing Technology

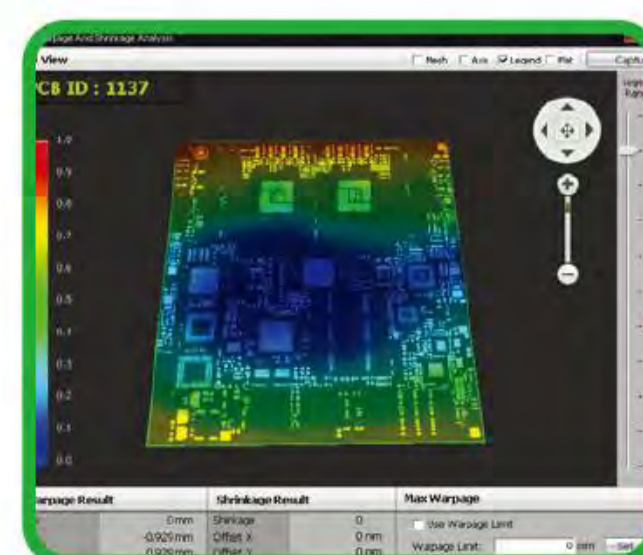
*Pad Referencing technology matches, in real time, non-inspection objects (patterns, holes and fiducial marks) on the PCB surface with the ideal PCB geometry as defined by the CAD file. Using IR light, reference teaching is fast and easy even without the CAD file.



Patterns, holes and fiducials on the PCB



Reference points automatically taught using IR light



3D Display of Warped PCB

***Patent Pending**

PadID	1402	1403	1404	1405
FovNo	10	10	10	11
OffsetX	0.017	0.021	0.026	-0.112
OffsetY	0.002	0.001	0.009	0.012

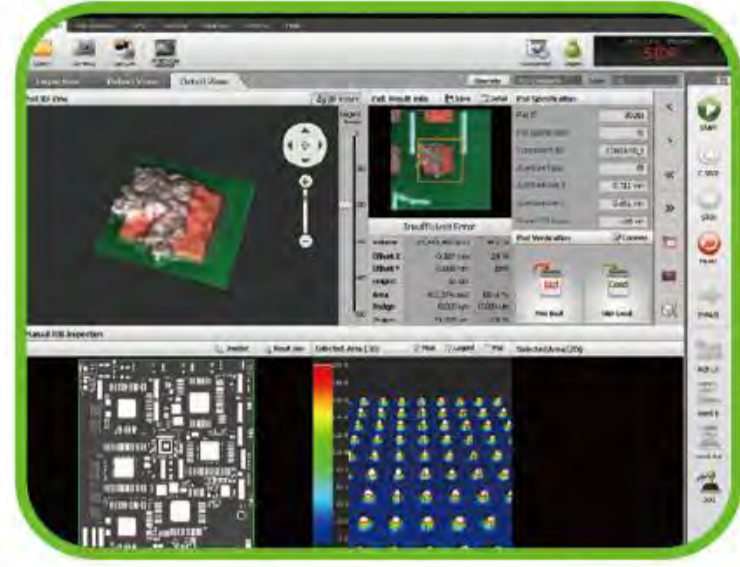
Result on Warped PCB

PadID	1402	1403	1404	1405
FovNo	10	10	10	11
OffsetX	-0.049	-0.075	-0.068	-0.057
OffsetY	-0.019	-0.026	0.009	-0.006

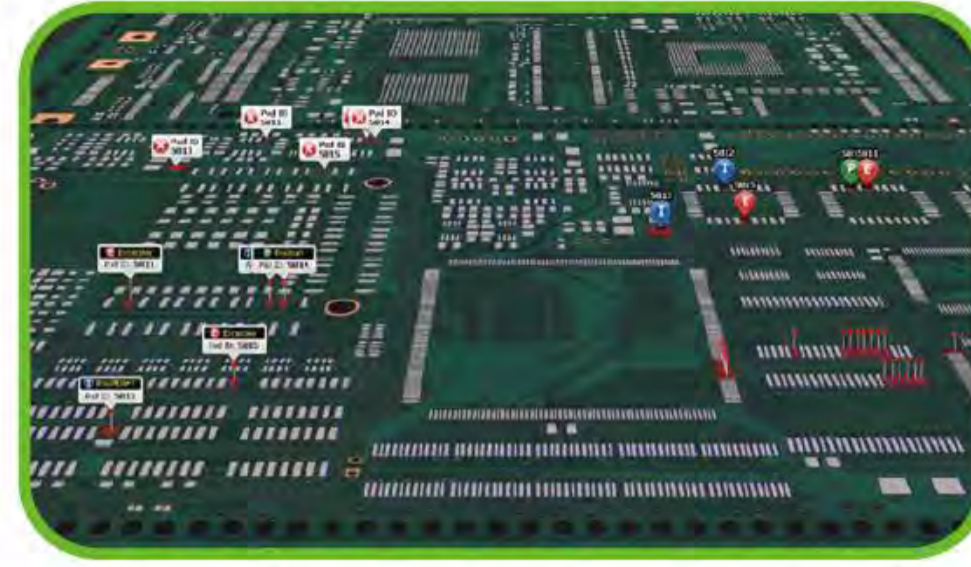
Results on Warped PCB with KSMART Warp

Renewal GUI on Simple Touch-Screen Operation

The latest Renewal GUI software, on Windows 7 and touch-screen friendly operation, maximizes the SPI's defect readability and system usability. Faster, more intuitive, full-of-functions software enables the easiest process optimization ever.

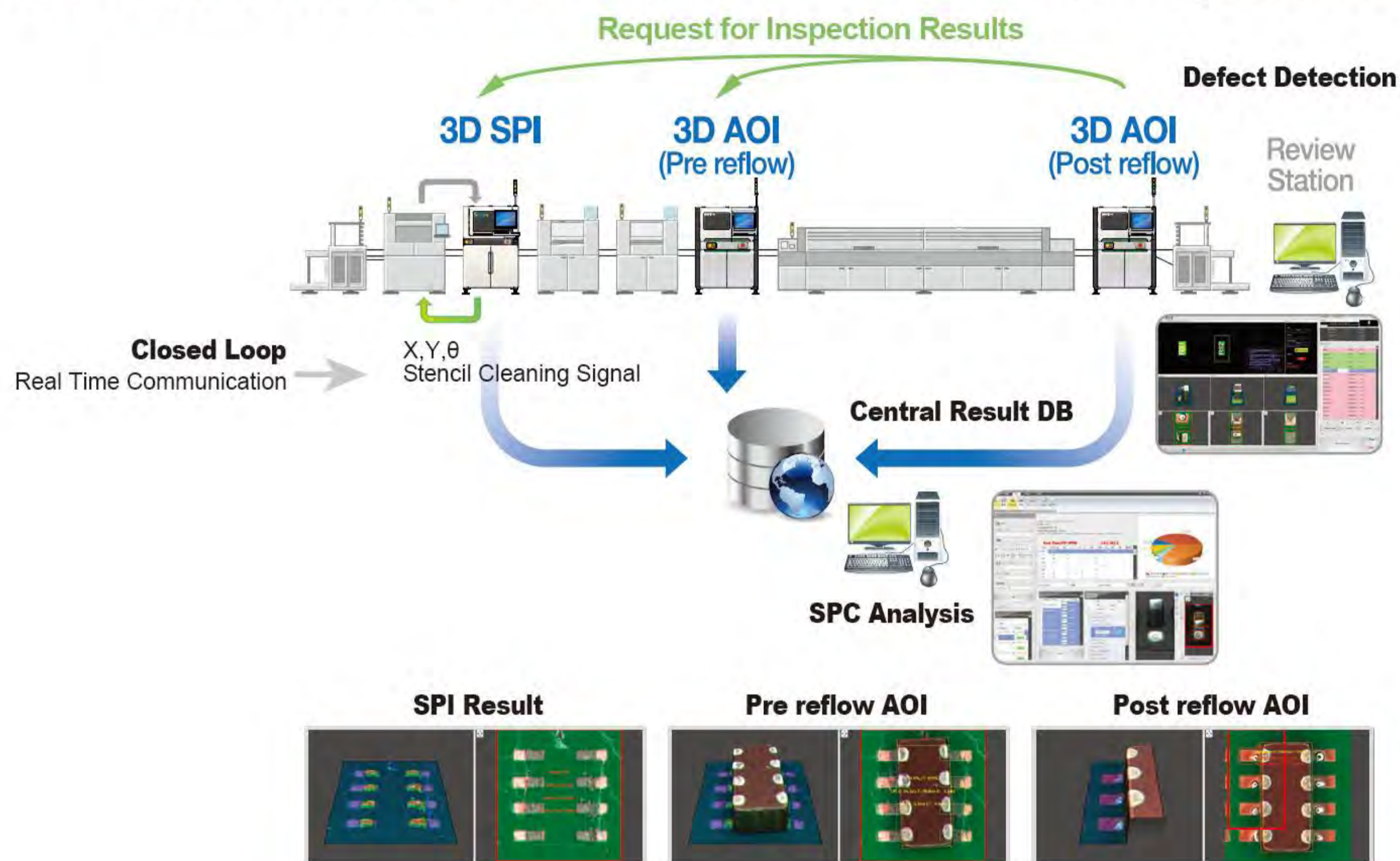


True 3D Defect Viewer Window



More Intuitive Defective Pads Display

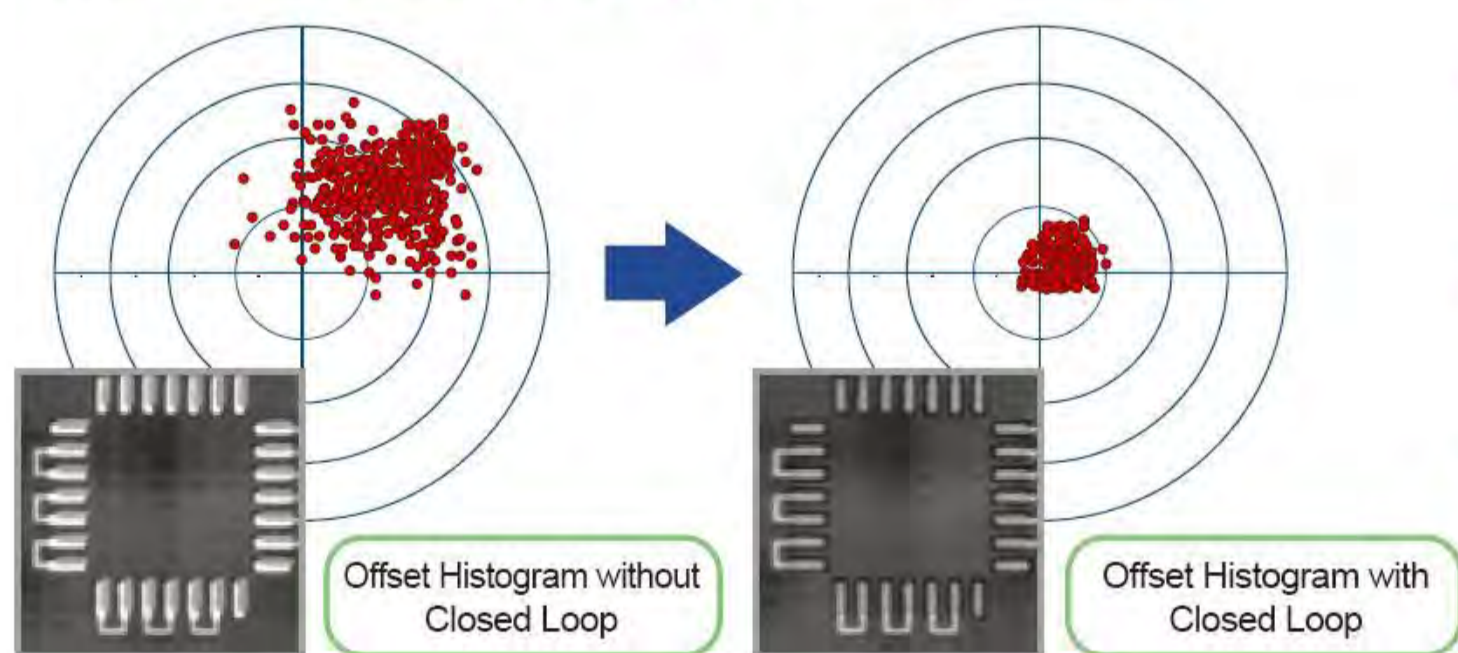
Smarter Communications for Total Process Control and Optimization



KSAMRT Link: Koh Young's 3D SPI and 3D AOI Now Communicates

Inspection results from Koh Young's 3D SPI system and 3D AOI systems are stored in the central result database, to be reviewed on the 3D AOI system's defect review station. True 3D measurement based inspection results offer the fastest & easiest understanding on the whole production process.

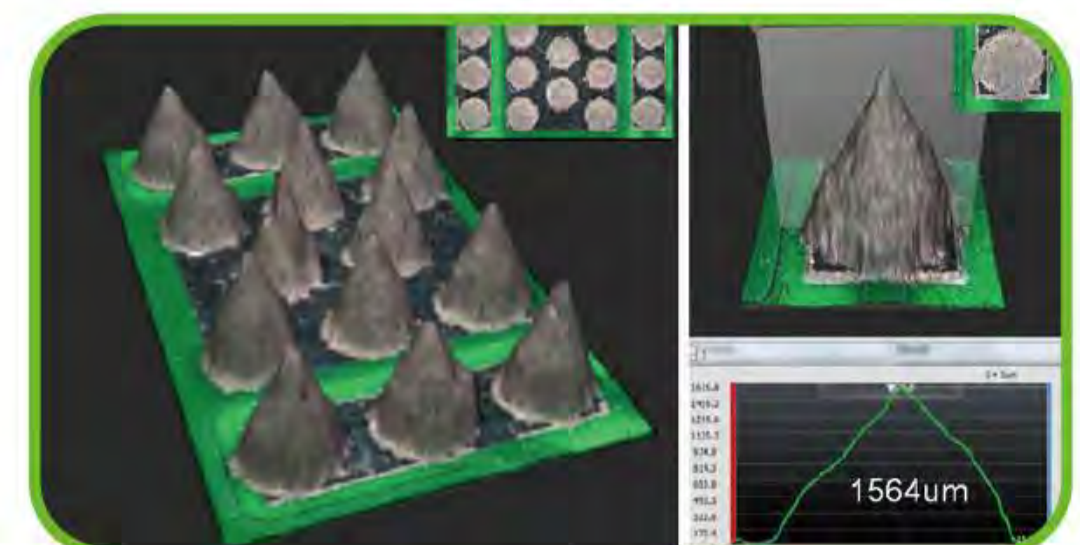
Real Time Closed Loop Communication



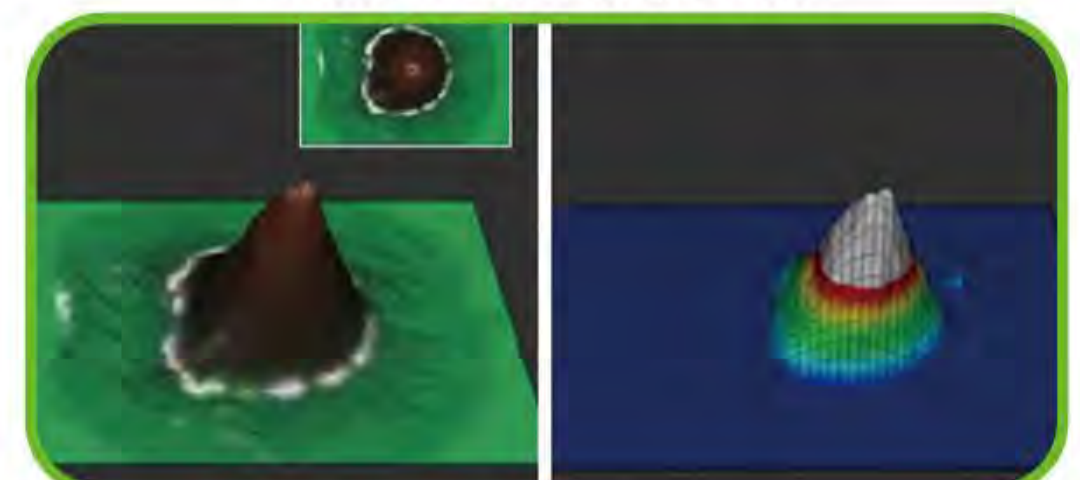
- ◆ Koh Young's 3D SPI inspection results feedback to any screen printers
- ◆ Offset inspection results communicated with screen printers in real time
- ◆ Improved results are reported on the SPC Plus SW

Stronger Statistical Process Control by SPC Plus SW

SPC Plus provides various intuitive statistical process analysis data based on true 3D measurement result.



2mm Solder Inspection



Glue Inspection

Wide Inspection Objects Coverage

Koh Young's Multi-frequency technology enables increased measurement range up to 2mm, not sacrificing any measurement accuracy. aSPIre 2 can inspect Glue, Sliver Epoxy and more non-solder materials accurately using its authentic 3D measurement capability.

Must-have Requirements of 3D SPI systems

Perfect Solution

	Solution		
Solution to Object Shadow Problem	◎	3D Shadow Free Moiré Technology & 4 Way Projection	
Solution to Reference Plane Shadow Problem	◎		
Solution to Specular Problem	◎		
Solution to Directional Problem	◎		
Real-time Solution to 2D Problem	◎	Pad Referencing	
PCB Warp Compensation Solution to 3D Problem	◎	Multi Frequency Moiré Technology + Z tracking	
Operator User Friendliness	◎	EasyUse, Touch Screen Operation	
FOV(Field of View) Size	10 μm*	15 μm*	20 μm*
Inspection Time per FOV*	23.5 x 17.3 mm (0.93 x 0.68 inch)	35.3 x 25.9 mm (1.39x 1.02 inch)	47.0 x 34.6 mm (1.85 x 1.36 inch)
Height Accuracy (on a KY Calibration Target)	0.27 sec	0.29 sec	0.31 sec
	0.22 sec	0.25 sec	0.27 sec
Min. Paste Deposit Size	1 μm	1.5 μm	2 μm
Z Resolution	100 μm (3.94 mils)	150 μm (5.91 mils)	200 μm (7.87 mils)
01005 Capability	0.37 μm		
Camera	◎	01005 Gage R&R (±50% tolerance) << 10 % at 6σ	
		4M Pixel High Speed Camera	

*XY resolution

※ Inspection time for the whole PCB varies by PCB condition.

Inspection Range

Metrology Capability	Volume, Area, Height, Offset, Bridging, Shape Deformity, Coplanarity
Types of Defects	Insufficient/Excessive/Missing Paste, Bridging, Shape Deformity, Paste Offset, Smear, Coplanarity

Inspection Performance

Max. Paste Size	10 x 10 mm	0.39 inch x 0.39 inch
Max. Paste Height	2 mm(Optional)	0.08 mils
Min. Distance between Paste Deposit	100 μm (at 150 μm paste height)	3.94 mils (at 5.91 mils paste height)
PCB Color Sensitivity	None	

PCB Handling

Conveyor Width Adjustment	Automatic
Conveyor Fix Type	Front/Rear Fixed (Factory Setting)

Software

Inspection Program Generation	Import GERBER Data (274X, 274D) / ODB++ (Optional)
Statistical Analysis Tool	SPC Plus - Histogram, Xbar&R Chart, Xbar&S Chart, Cp&Cpk, %Gage R&R - Real Time SPC & Multiple Display - SPC Alarm - Automatic Report from Remote Computer

User Friendliness Size Dependant Library for Inspection Condition Setting

Operating System User Defined Process Stop by Software

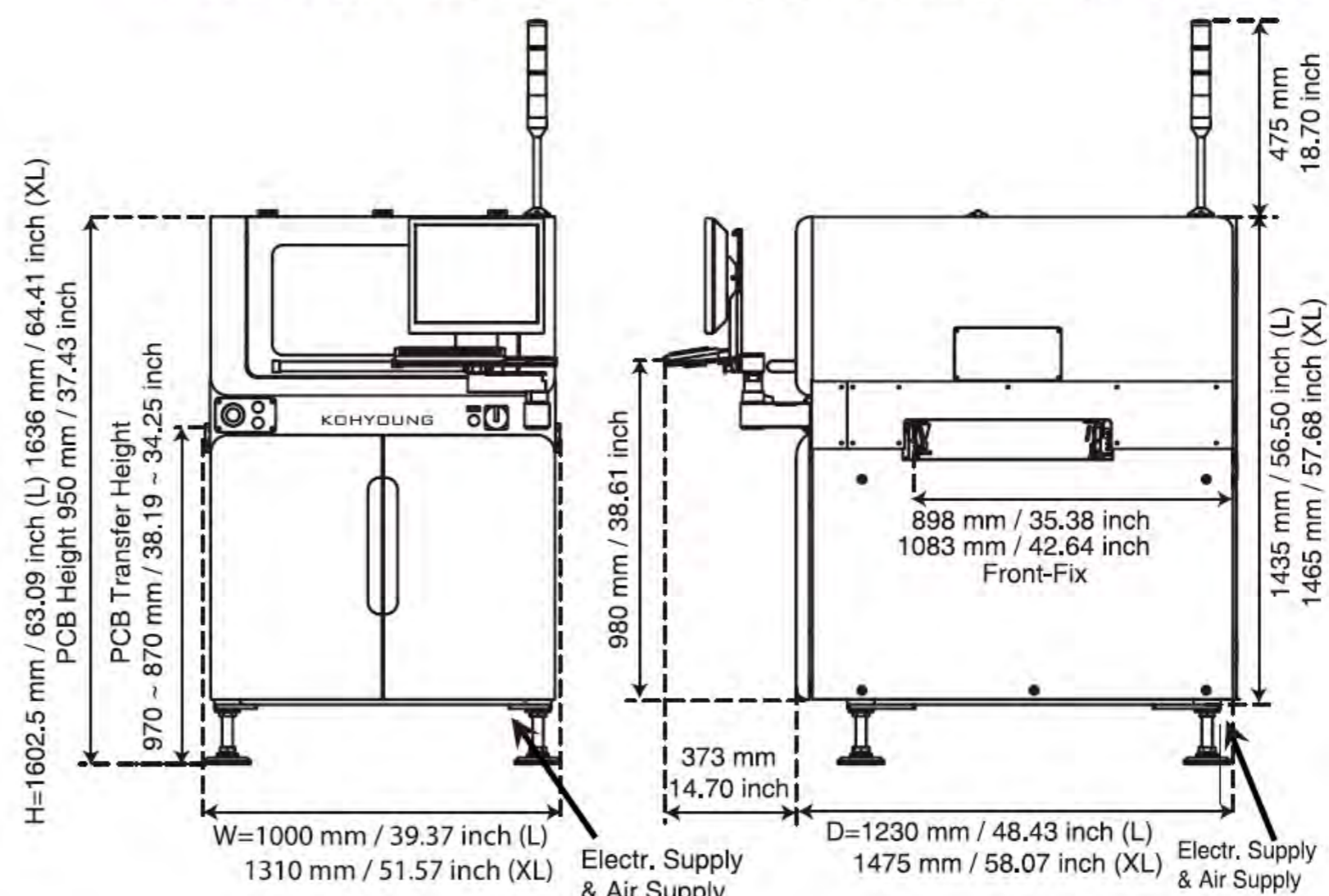
Windows XP Professional / Windows 7

Options

- KSMART Monitoring
- Off-line SPC & Defect Review Station
- Off-line Programming Station
- Barcode Reader (1D/2D)
- Certified Calibration Target
- KSMART Link
- Closed Loop / APC
- Flexible Dual Lane
- ODB++ File Conversion
- HDD Raid 1 (Mirrored)
- UPS
- KSMART Warp

※ These specifications are subject to change without notice.

	L	XL
Max. PCB Size	510 X 510 mm (20.08 X 20.08 inch)	810 X 610 mm (31.89 X 24.02 inch)
Min. PCB Size	50 x 50 mm (1.97 x 1.97 inch)	
PCB Thickness	0.4 ~ 5.0 mm (0.016 ~ 0.20 inch)	0.5 ~ 8.0 mm (0.020 ~ 0.31 inch)
Max. PCB Weight	5.0 kg (11.0 lbs)	10.0 kg (22.1 lbs)
Machine Weight	600 kg (1323 lbs)	850 kg (1874 lbs)
Bottom Side Clearance	30 mm (1.18 inch)	
Electrical Supply	200~240 VAC, 50/60 Hz Single Phase	
Air Supply	5 Kgf/cm ²	



© Koh Young Technology Inc. 2008 - 2013

KOH YOUNG TECHNOLOGY INC.

14th & 15th Floor, Halla Sigma Valley Building, 345-90 Gasan-dong, Geumcheon-gu, Seoul 153-802 Korea
Tel. +82-2-6343-6000 / Fax. +82-2-6343-6001 / E-mail. info@kohyoung.com