

# ZENITH

The Industry's **Best Selling** and **First True 3D AOI** Solution

Using patented True 3D technology, the Zenith measures true profilometric component shapes including foreign materials, patterns, and solder joints with True 3D capabilities to overcome inspection challenges.



Ultimate Solution for  
Inspection Challenges



Incomparable True 3D  
Inspection Performance



IPC-based Solder Joint  
Inspection



AI-powered Auto  
Programming (KAP)



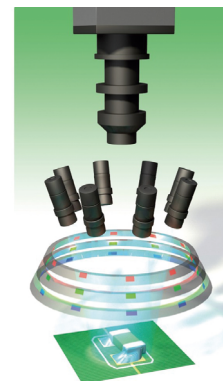
KSMART Solutions:  
True 3D Measurement-based  
Process Control System





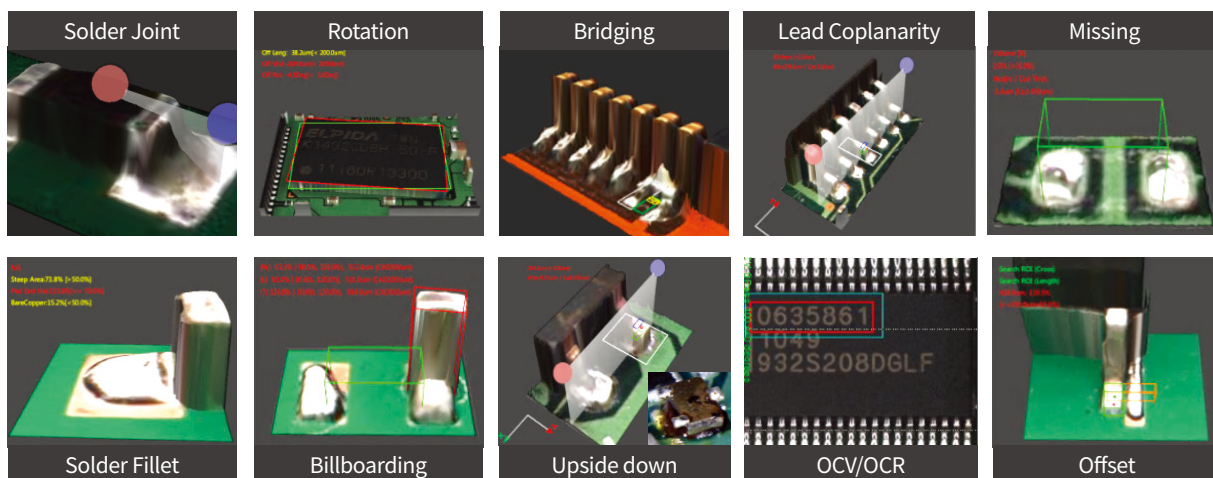
## Ultimate Solution for Inspection Challenges

- Circuit boards are becoming more complex with new products. An AOI machine is becoming even more crucial to the electronics manufacturing lines. The industry has many 2D, 2.5D and pseudo-3D inspection options that only compound issues with false calls and escapes. The Zenith AOI Series is the only machine that delivers True 3D Inspection to address solutions caused by highly specular packages and shadows from adjacent parts.



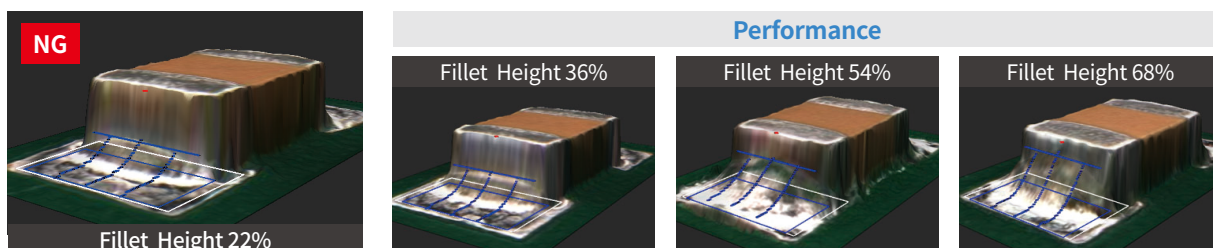
## Incomparable True 3D Inspection Performance

- The Zenith AOI Series is the only solution in the industry to base its inspection criteria according to IPC-610 standards for electronic assembly acceptability requirements. It provides clear and concise AOI measurements to accurately identify multiple defects. Because it uses a quantitative True 3D measurement-based approach, the system delivers exceptional accuracy and repeatability.
- True 3D Inspection Performance :** Missing Solder, Offset, Polarity, Upside Down, OCV/OCR, Solder Fillet, Billboarding, Lifted Lead, Lifted Body, Tombstone, Bridging, and more.



## IPC-based Solder Joint Inspection

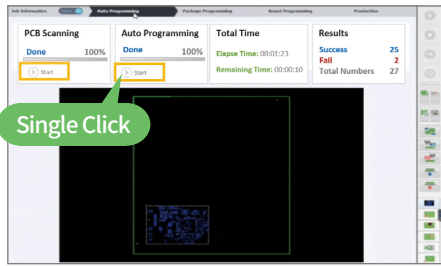
- Through Koh Youngs's proprietary vision algorithms, the Zenith series can quantify the exact height of a solder joint. Despite shadows or interreflection challenges, the Zenith accurately inspects and measures according to IPC-610 standards for electronic assembly acceptability requirements.



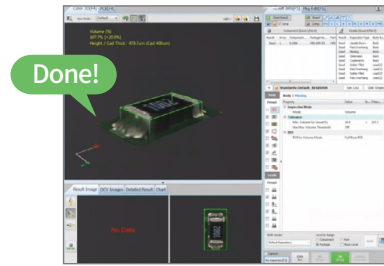


## AI-powered Auto Programming (KAP)

- Industry-leading 3D profilometry technology converges with Koh Young's proprietary AI technology to deliver true automatic programming. The innovative geometry-based Koh Young Auto Programming (KAP) software solution reduces the programming process to minimize time to production and reduce costs.



One Click Needed To Start KAP



Programming Time Saved by 70%

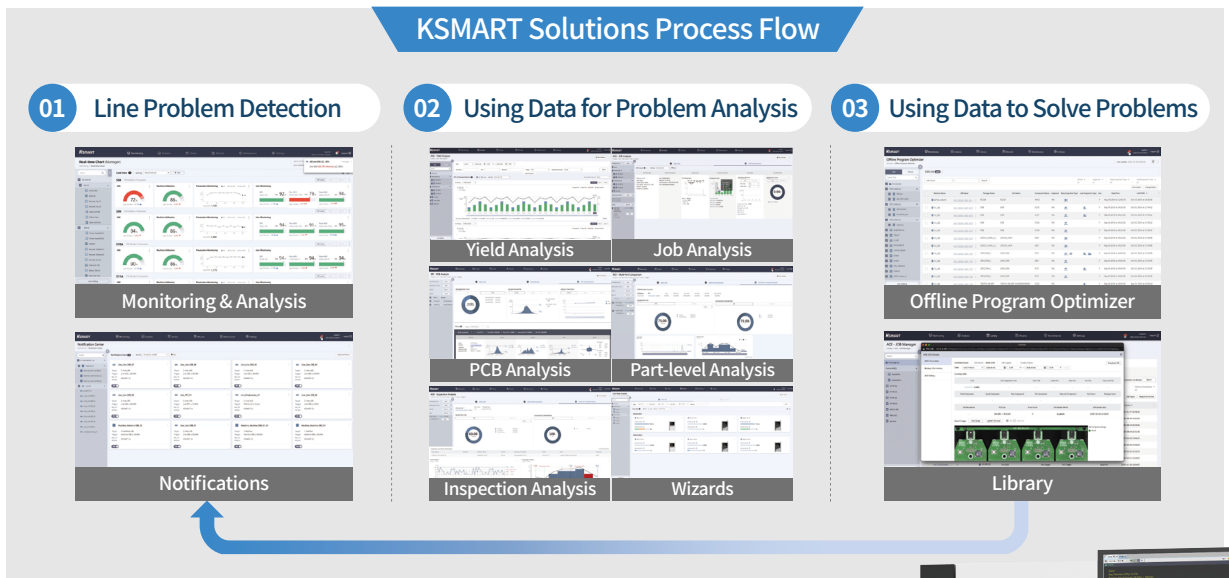


## KSMART Solutions: True 3D Measurement-based Process Control System

- Koh Young pioneered True 3D measurement technology 20 years ago to create a zero-defect future. This gave rise to KSMART Solutions and its continuous efforts to leverage data and connectivity.
- KSMART Solutions uses Artificial Intelligence to help automate process control while focusing on data management, analysis, and optimization. It collects data from across the factory line for defect detection, real-time optimization, enhanced decisions, and traceability to improve metrics, increase quality, and lower costs by eliminating variance, false calls, and escapes.

### “KSMART Solutions is the Gateway to a Smart Factory”

- Converts data into knowledge for effective and quality-driven actions
- Delivers an AI-powered process analysis and optimization tool
- Achieves an autonomous process optimization facility



“Before we had many escapes and false calls, it is unimaginable. That went away with the Koh Young AOI. Once you set it up the way you want, it runs like a dream. With SPI at the beginning of the line and an AOI at the end, we have a closed loop system.” - Mid-tier ODM SMT Manager



# Must-check Requirements of a 3D AOI System

Requirements	Solutions
Solution to Shadow Problem	3D Shadow Free Moiré Technology & 8-Way Projection
Specular Problem Solution	
Shadowed Area Between Tall Components	
Small (01005 in) 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	True 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/VCR, Coplanarity, Solder Fillet, Lifted Lead, Billboarding, Tombstone, Bridging, Dimension
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Zenith Inspection Performance	Camera & Resolution	FOV Size	Full 3D Inspection Speed	Max. Measurement Height	Height Accuracy (KY Calibration Target)	Illumination
	4M 10um	20 x 20 mm	7.1 cm²/sec (0.56 sec/FOV)	5 mm	±3%	IR-RGB LED (Dome Styled Illumination)
	4M 15um	30 x 30 mm	15.25 cm²/sec (0.59 sec/FOV)			
	4M 20um	40 x 40 mm	26.2 cm²/sec (0.61 sec/FOV)			

PCB Handling	Conveyor Width Adjustment	Automatic			
	Conveyor Fix Type	Front / Rear Fixed (Factory setting)			
	(Optional Built-In Flipper) Machine Size	PCB Size (X*Y)	PCB Thickness	Clearance (Top / Bottom)	Max. PCB Weight
	1000 x 1600 x 1627 mm (39.4 x 63.0 x 64.1 in)	Max: 500 x 500 mm (19.7 x 19.7 in) Min: 100 x 100 mm (3.9 x 3.9 in)	1.0 ~ 5 mm (0.04 ~ 0.2 in)	Clearance: 40 mm / 50 mm (1.6 x 2.0 in) Edge Clearance: 3 mm / 3 mm (0.1 x 0.1 in)	2 kg (4.4 lbs)

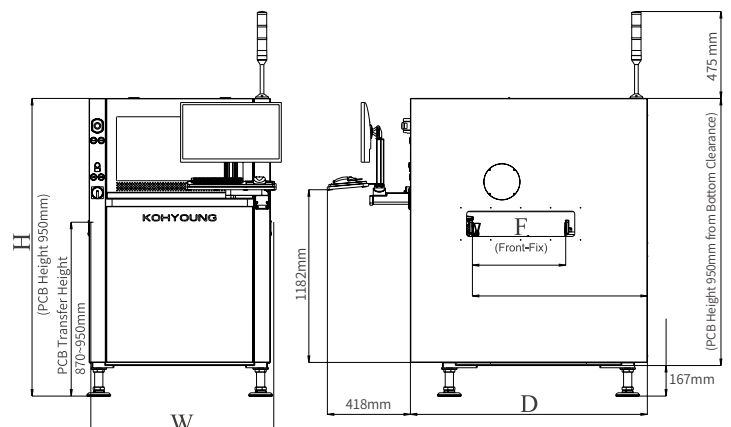
Software	Supported Input Format	GERBER Data (274X, 274D), ODB++, Placement File, Mounter JOB File, Allegro, Zuken, Mentor (Optional)
	Programing Software	ePM-AOI, AOI GUI
	Statistical Process Control Tool	SPC Plus, Review Station
	User-Friendly Operator	Library Manager & KYCAL (Auto Camera Calibration, Auto Illumination Calibration, Auto Height Calibration)
	Operating System	WINDOWS 10 IOT ENTERPRISE LTSC 2019

Add-On Solutions	<ul style="list-style-type: none"> <li>- 1D &amp; 2D Handy Barcode Reader</li> <li>- 1D &amp; 2D Inline Barcode Reader</li> <li>- Integrated Calibration Target</li> </ul>	<ul style="list-style-type: none"> <li>- Offline SPC Pro Station</li> <li>- Offline Programming Station</li> <li>- Review Station</li> <li>- Foreign Material Inspection</li> </ul>	<ul style="list-style-type: none"> <li>- KSMART Solutions (Monitoring &amp; Analysis, Remote Access, Offline Programming Optimizer, Link Data Analysis, Notification)</li> </ul>
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(The above specifications are subject to change without notice.)

	M		L		XL	
	Single Lane	Dual Lane	Single Lane	Dual Lane	Single Lane	Dual Lane
Max. PCB Size (X x Y)	330 x 330 mm (12.9 x 12.9 in)	Single Mode °	510 x 510 mm (20.0 x 20.0 in)	Single Mode °	850 x 690 mm (33.4 x 27.1 in)	Single Mode °
		330 x 580 mm (12.9 x 22.8 in)		510 x 580 mm (20.0 x 22.8 in)		850 x 580 mm (33.4 x 22.8 in)
		Dual Mode		Dual Mode		Dual Mode
		330 x 325.5 mm (12.9 x 12.8 in)		510 x 320 mm (20.0 x 12.5 in)		850 x 320 mm (33.4 x 12.5 in)
Min. PCB Size	50 x 50 mm (1.9 x 1.9 in)					70 x 70 mm (2.7x2.7 in)
PCB Thickness	0.4 ~ 4 mm (0.01 ~ 0.15 in)		0.4 ~ 5 mm (0.01 ~ 0.19 in)		0.6 ~ 8 mm (0.02 ~ 0.31 in)	
Max. PCB Weight	Standard : 2kg (4.4 lbs), Heavy weight option : 5kg (11.0 lbs)				10kg (22.0 lbs)	
Machine Weight	550 kg (1212.5 lbs)	600 kg (1322.7 lbs)	600 kg (1322.7 lbs)	700 kg (1543.2 lbs)	850 kg (1873.9 lbs)	900 kg (1984.1 lbs)
Bottom Clearance	50 mm (1.9 in)					
Supplies	220 VAC ± 10%, 1 Phase, 50/60Hz, 5Kgf/cm² (0.45MPa)					
W	820 mm (32.2 in)		1000 mm (39.3 in)		1350 mm (53.1 in)	
D	1265 mm (49.8 in)	1445 mm (56.8 in)	1265 mm (49.8 in)	1445 mm (56.8 in)	1445 mm (56.8 in)	
H	1627 mm (64.0 in)					

<sup>o</sup> Please contact us for more information about PCB Sizes.  
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