KOH YOUNG TECHNOLOGY
INTELLIGENT INSPECTION

NEPTUNE C+

Explore the Depths of Your Process

Revolutionary **True 3D In-line Dispensing Process Inspection (DPI)**
with a **Thickness Measurement Solution**
based on Patented Technologies

- True 3D Profiling
- Superior Performance
- AI-Powered Capabilities
- High Throughput
- Simple, Intuitive Programming

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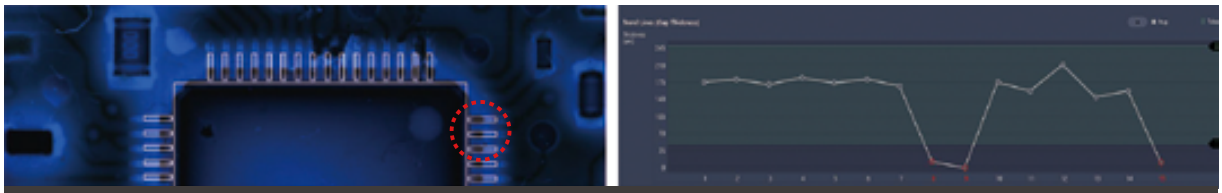
Challenges for Precise Thickness Measurement

Conformal coating protects and isolates electronic circuitry from moisture, debris, corrosion, and shock, plus it adds mechanical stability to reduce failures and improve reliability. It is a technique widely used in the automotive, LED, military, aerospace, medical, and mobile industries.

Most optical systems use UV light to inspect the surface for presence and gauges to measure material thickness in a particular spot, which does not provide the accuracy and repeatability needed. Inspecting transparent materials proved to be a challenge due to the laser's shallow penetration depth and elapsed time. Traditional laser-confocal or electron microscope systems measure three-dimensional shapes. Koh Young's revolutionary Neptune C+ provides the ultimate solution to these challenges.

True 3D Profiling

- The Neptune C+ is the industry's first 3D in-line DPI and thickness measurement solution for transparent material inspection. The system allows manufacturers to explore the depths of its process and accurately identify defects with 2D, 3D, and cross-section views.
- The system accurately measures materials for coverage, thickness, and consistency with user-defined threshold settings. It also inspects bubbles and other defects as small as 200-microns, even inspecting "keep out" areas for 100-micron splash marks.



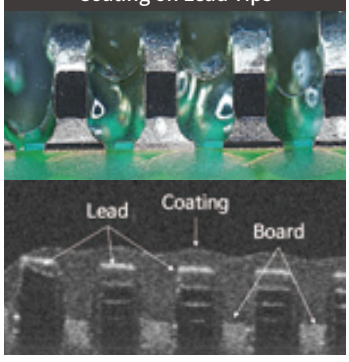
IC Lead Gap Thickness Measurement

3D Thickness Measurement

Superior Performance - L.I.F.T. Technology PATENTED

- The Koh Young L.I.F.T. technology delivers non-destructive 3D inspection to precisely measure and inspect fluids that are wet or dry. Based on low-coherence interferometry, L.I.F.T. employs Near Infrared (NIR) Light to capture images through multiple layers of a fluid structure regardless of transparency. This patented technology provides the most accurate and reliable 3D inspection across any surface – smooth, uneven, or rough.

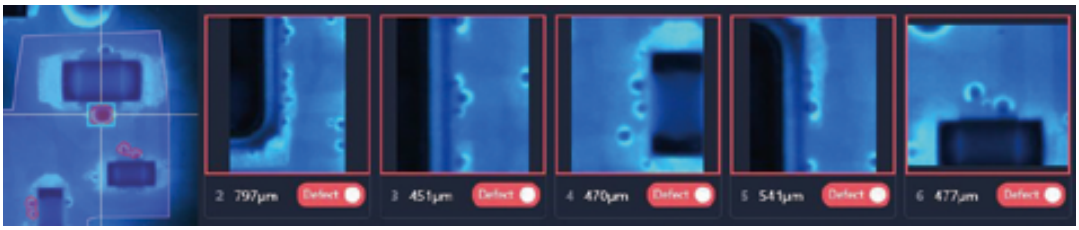
Coating on Lead Tips



AI-Powered Capabilities

- With its proprietary machine learning technology, the Neptune C+ offers enhanced inspection capabilities enabling autonomous bubble inspection without teaching and endless tuning.

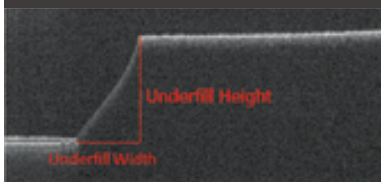
Bubble Inspection



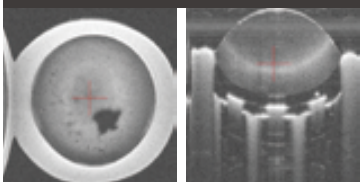
High Throughput

- Not limited to conformal coating, the Neptune C+ measures underfill, epoxy, bonding, glue, and more to deliver an accurate measurement of transparent, translucent, and pigmented materials. The system is currently suited for acrylic, silicone, polyurethane, water-based, UV-cure, and hybrid coatings with additional materials being investigated. The Neptune C+ handles several types of applications from research labs to high volume production.

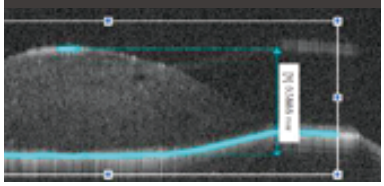
Underfill



LED Lens



Glue



* The above inspection images are taken from Neptune T, a different dispensing process inspection system from Koh Young. These images are provided for reference purposes only and inspection results may vary on the Neptune C+ inspection system.

Simple, Intuitive Program Creation

- The Neptune C+ programming software provides a hands-on user interface, which emulates a simple raster graphics editor to allow intuitive programming with great flexibility.
- Programming is further simplified with our wizard-based graphical user interface. All parameters can be adjusted for quick setup and fast changeovers.

Recipe → Production → Review

"Other systems in the market measure IC leads with a point method, which resulted in unreliable measurement results. Koh Young's Neptune Series is truly groundbreaking, as it measures the actual coating thickness. The Neptune helped us satisfy our customer's demanding quality standards."

- Top Tier Global Automotive Customer

Specifications

Requirements	Solutions
Thickness measurement for transparent and translucent materials on printed circuit boards and flat surfaces	Koh Young L.I.F.T. technology (Laser Interferometry for Fluid Tomography)
Thickness measurement for transparent and translucent on IC lead top and spaces between leads	
Height of transparent and translucent materials in cavities and flat surfaces	
Bubble Inspection	AI engine for bubble detection
Detection of coating and splash	Rule-based algorithms
Easy-to-use software program	Neptune Series' programming software

Inspection Items	Inspection Task	Coating thickness measurement, height of transparent materials, bubbles, splashes, excess of coating, lack of coating, etc.

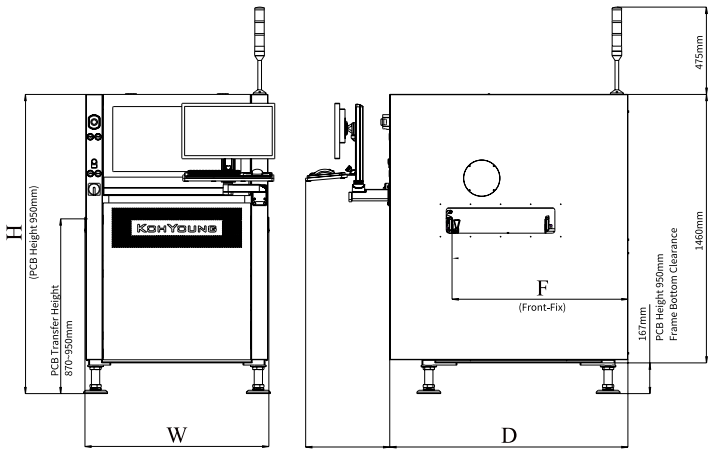
	Camera & Resolution	FOV Size	Axial Resolution (Z Axis)	Max. Measurement Range (Z Axis, Depth)	Illumination
Neptune C+ Inspection Performance	12M 15um	(H) 61.44 x (V) 46.08 (Diagonal: 76.80mm)	5 um (High Resolution)	5 um ~ 1.55 mm (in air)	UV-RGBW LED (Dome-Styled Illumination)
			10 um (Standard)	10 um ~ 3.5 mm (in air)	

PCB Handling	Conveyer Width Adjustment	Automatic
	Conveyer 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)
	Programing Software	ePM-DPI, Neptune C
	Statistical Process Control Tool	SPC, Review Station
	User-Friendly Operator	KYCAL (Auto Camera Calibration, Auto Illumination Calibration, Auto Height Calibration)
	Operating System	Windows 10 IoT Enterprise LTSC 2019
Add-On Solutions	- 1D & 2D Handy Barcode Reader	

(The above specifications are subject to change without notice.)

	L (Flipper)	L		XL	
	Single Lane	Single Lane	Dual Lane	Single Lane	Dual Lane
Max. PCB Size (X x Y)	500 x 500 mm (19.69 x 19.69 in)	500 x 500 mm (19.69 x 19.69 in)	Single Mode ° 500 x 580 mm (19.69 x 22.83 in) Dual Mode 500 x 320 mm (19.69 x 12.60 in)	850 x 690 mm (33.46 x 27.17 in)	Single Mode 850 x 580 mm (33.46 x 22.84 in) Dual Mode 850 x 320 mm (33.46 x 12.60 in)
Min. PCB Size (X x Y)	100 x 100 mm (3.94 x 3.94 in)	50 x 50 mm (1.97 x 1.97 in)		· 70 x 70mm (2.76 x 2.76 in) · 150 x 150mm [w/ vacuum] (5.91 x 5.91 in)	
PCB Thickness	1 ~ 5 mm (0.04 ~ 0.20 in)	0.4 ~ 5 mm (0.02 ~ 0.20 in)		0.4 ~ 8 mm (0.02 ~ 0.31 in)	
Max. PCB Weight	2 kg (4.40 lbs)	4 kg (8.82 lbs)		10 kg (22.05 lbs)	
Machine Weight (Approx.)	700 kg (1543.24 lbs)	600kg (1322.77 lbs)	700kg (1543.24 lbs)	800kg (1763.7 lbs)	850kg (1873.93 lbs)
Bottom Clearance	3.5 mm (0.14 in)				
Supplies	220 VAC ± 10%, 1 Phase, 50/60Hz, 5Kgf/cm² (0.45MPa)				
W	1000 mm (39.37 in)	1000 mm (39.37 in)		1350 mm (53.15 in)	
D	1600 mm (62.99 in)	1295 mm (50.98 in)	1475 mm (58.07 in)	1475 mm (58.07 in)	1475 mm (58.07 in)
H	1627 mm (64.06 in)				

° Please contact us for more information about PCB Sizes.
(The above specifications are subject to change without notice.)



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