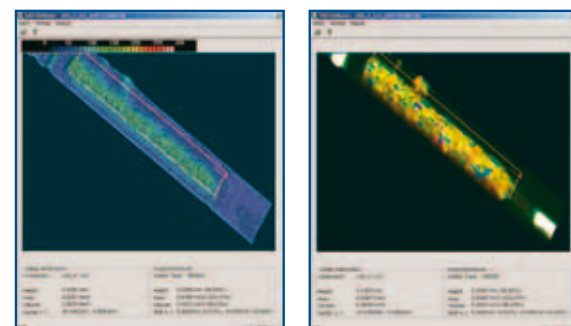
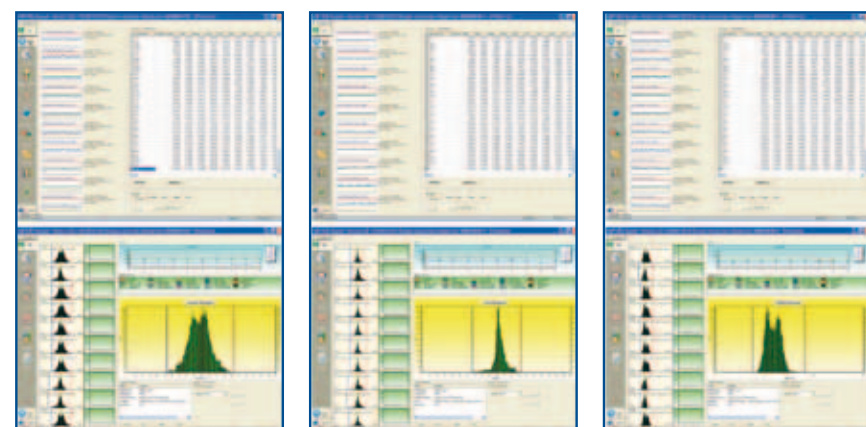


TR7007 SERIES

3D IMAGES



V, A, H AND OTHER CHECKS



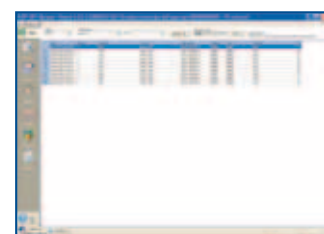
Volume

Area

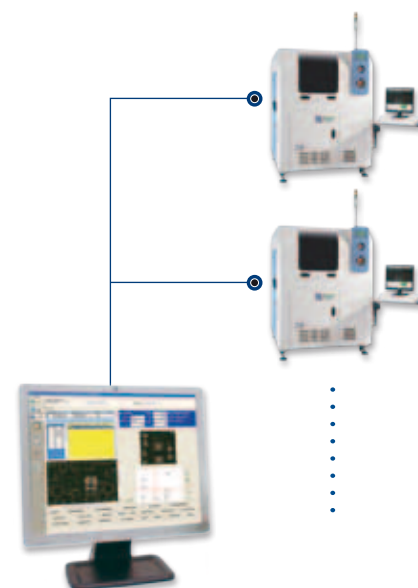
Height

PCB VIEW

A color interfaces displays the status of solder volume (Area, Height, Shift X and Shift Y)



CONTROL CENTER



OPTICAL AND IMAGING SYSTEM

Camera Type	4 MP color camera
Optical Resolution	10µm or 14µm (Factory Setting)
Field of View	10µm 23.20 x 17.26mm 14µm 32.48 x 24.16mm

INSPECTION FUNCTIONS

Defects Detected	Insufficient Paste, Excessive Paste, Shape Deformity, Missing Paste and Bridge
Measurement	Height, Area, Volume and Offset

MECHANICAL STAGE

Linear Motor and Linear Scale with DSP-based Motion Controller	
X,Y Resolution	0.5µm
Z Resolution	1µm

INSPECTION SPEED

10µm	Up to 80cm ² /sec
14µm	Up to 160cm ² /sec

INSPECTION PERFORMANCE

Volume Repeatability	
Calibration Target (at 3 Sigma)	< 1% on certification target
Height Repeatability	
Calibration Target (at 3 Sigma)	< 1% on certification target
Solder GR&R (± 50% Tolerance)	< 10% @ 6 Sigma
Maximum board Warp	±5mm
Height Resolution	0.4µm
Height Accuracy	2µm on certification target
Max. Solder Paste Size	6400 x 4800µm
Min. Solder Paste Size	100 x 100µm
Min. Solder Paste Pitch	100µm
Max. Height Range	10µm 600µm 14µm 550µm

PCB AND CONVEYOR SYSTEM

Board Size	TR7007	50 x 50mm ~ 510 x 460mm
	TR7007L	50 x 50mm ~ 660 x 610mm
	TR7007LL	50 x 50mm ~ 850 x 610mm
Top Side Clearance		40mm
Bottom Side Clearance		40mm
Board Thickness		0.6mm ~ 5mm
Max. Board Weight	TR7007	3kg, 5kg (Option)
	TR7007L & TR7007LL	5kg, 8kg (Option)

DIMENSIONS

Dimensions	TR7007: (W)1220 x (D)1425 x (H)2107 mm
	TR7007L: (W)1400 x (D)1813 x (H)2121mm
	TR7007LL: (W)1600 x (D)1813 x (H)2121mm
	*Signal tower and open keyboard panel included.
Weight	TR7007: 850kg / TR7007L: 1075kg / TR7007LL: 1117kg
Power Requirement	220V AC/15A, Single phase
Air Requirement	TR7007L & TR7007LL 0.5Mpa (73psi) compressed air

OPTIONAL

SPC, Offline Editor, Gerber Tool, Barcode Reader (Linear, 2D), Support Pin and Dual Lane (TR7007)

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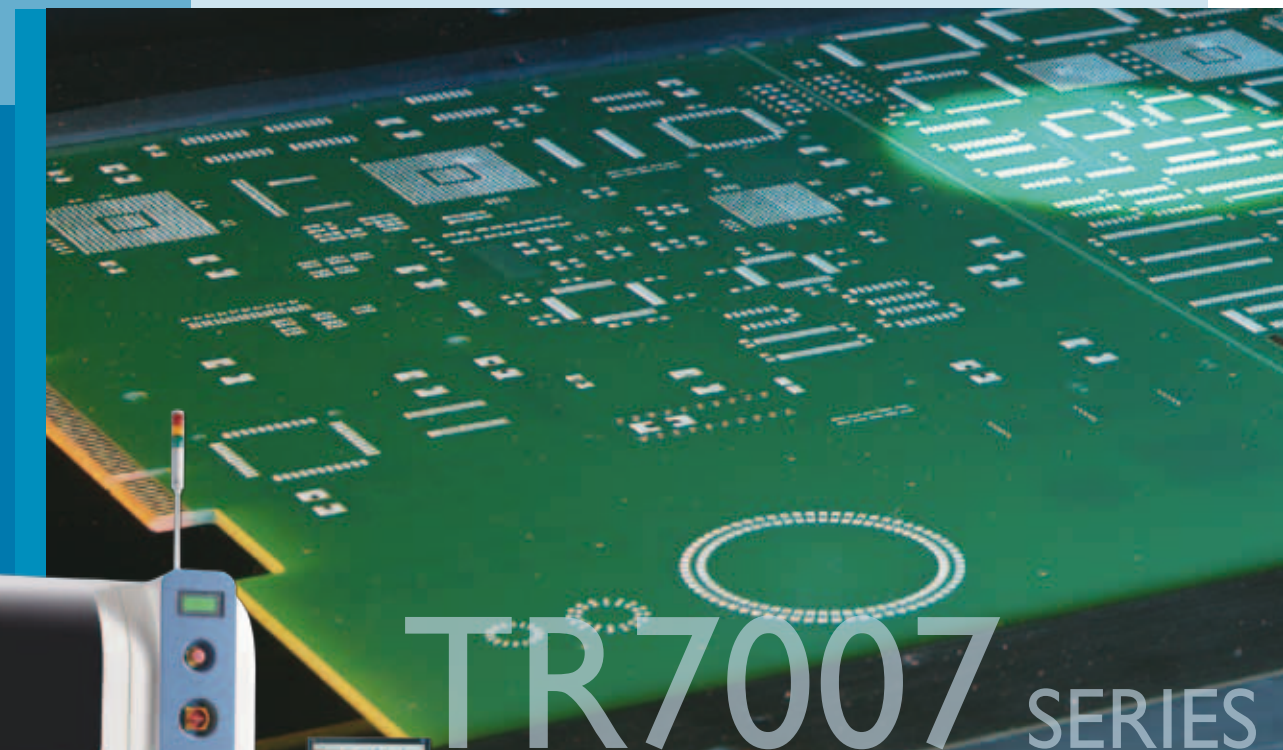
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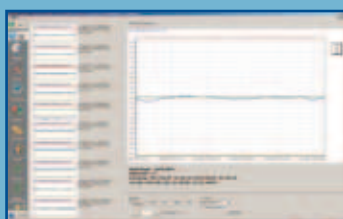
Shanghai, China
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FAX: +86-21-64957923
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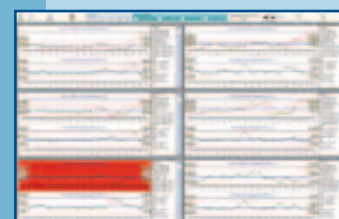


THE FASTEST 3D SPI SYSTEM IN THE WORLD

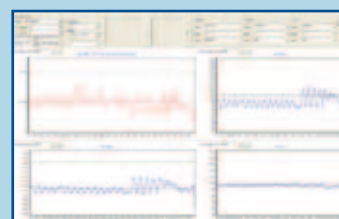
	TRI TR7007	C COMPANY XX-500	K COMPANY A-2
Fringe Pattern	✓	✓	✓
Inspection Speed	160 cm ² /s (14µm) 80 cm ² /s (10µm)	80 cm ² /s (15µm)	47 cm ² /s (15µm) 21 cm ² /s (10µm)
2D color	✓	✗	✗
Shadow Free	✓	✗	✓
Linear Motor (X,Y)	✓	✓	Ball Screw, AC Servo



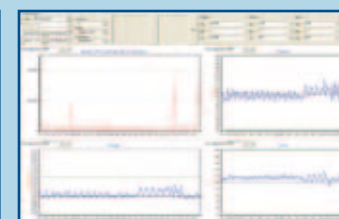
Control chat



Real Time Monitor



Real time monitor-Cpk by board



Real time monitor-Cpk by type



A NEW SPI SYSTEM FOR THE NEW SMT GENERATION

INDUSTRY'S FASTEST 3D SPI SCANNING

- ▶ Full 3D scans at maximum 160cm²/sec @ 14µm resolution.
- ▶ Repeatable and accurate results even on small CSP, Q201, and 01005 components.

ADVANCED, HIGHLY ACCURATE X-Y TABLE SYSTEM

- ▶ Linear motor and linear scale contribute to a more accurate X-Y Table System. The outstanding repeatability of the linear motor, along with its low noise, no maintenance and long life combine with the dynamic imaging system to produce the most stable inspection results of any machine in its class.

3D SOLDER PASTE INSPECTION

- ▶ True 100% In-Line Solder Paste Inspection.
- ▶ Optimal price/performance ratio.
- ▶ Inspection of Area, Volume, Height, Shift, Peak Height, Shape, Deformation, Registration, Bridge, and Foreign Material.
- ▶ Users can define the tolerances for all inspection parameters.
- ▶ Up to 10µm resolution meets the requirements for fine-pitch PCBA and speed-critical applications.
- ▶ Color images can be used to display the distribution of the solder height.

HIGH-RESOLUTION COLOR 2D CAMERA

- ▶ Color 2D images to distinguish solder pad and solder-resist mask with 3D height profile images for precise measurement.
- ▶ 2D x 3D Virtual Reality perspective display provides a user-friendly defect review.
- ▶ Color camera can be used to find fiducial marks during the inspection process.

WORLD WIDE SERVICE AND SUPPORT

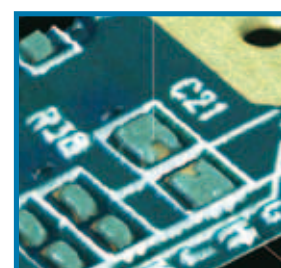
- ▶ A global engineering service network provides instant support.



3D Solder Paste Image - BGA



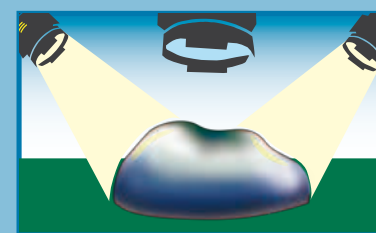
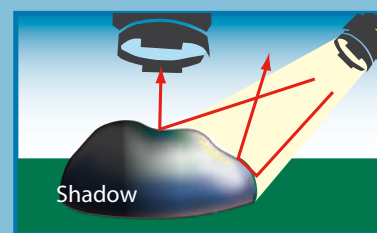
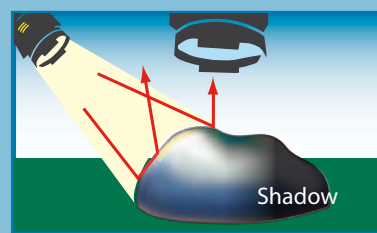
3D Solder Paste Image - IC Pins



2D x 3D Virtual Reality Perspective Display

EFFECTIVE SOLUTION FOR SHADOWS AND SPECULAR REFLECTION

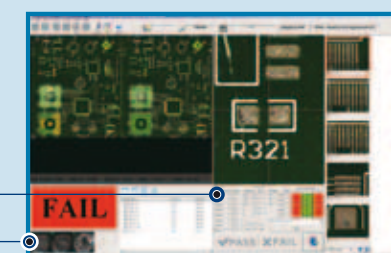
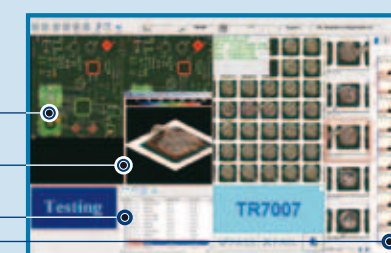
A traditional single light source may cause multiple reflections and or specular reflections on an object's illuminated surface thus creating shadows on the backside of its surface that impact the results of 3D solder paste inspections. The TR7007 adopts a dual light source that operates with TRI's dual-side data merge technology. It solves shadow and reflection problems that allow it to achieve the most accurate inspection results possible.



USER-FRIENDLY INTERFACE

The TR7007's new software integrates multiple functions in one screen so users can view all relevant information with one glance.

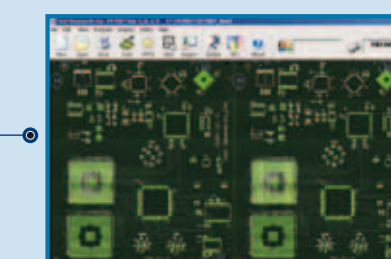
- ▶ Displays PCB map and shows total board profile.
- ▶ Both 2D and 3D images are available at run time for defect review and inspection program editing.
- ▶ Displays the details of inspection results and exports the raw data for user tracking to significantly improve the quality and efficiency of PCB manufacturing.
- ▶ Displays the distribution histogram of inspection results for individual PCBs, with the capability to select from volume, area, height and shift X and Y.
- ▶ The parameter-adjusting dialog has been integrated onto the main screen for users to easily check and modify specific solder paste parameters.
- ▶ For every inspection, the system displays fiducial mark inspection results, making it easier for users to monitor fiducial mark status.



Comprehensive Main Screen

EASY PROGRAMMING ENVIRONMENT

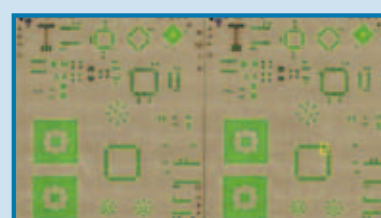
- ▶ Component library-based inspection window can be generated with CAD data.
- ▶ Auto-window generation for CAD-less inspection process.
- ▶ Imports Gerber File system for fast programming preparation.
- ▶ Local and multi-fiducial function ensure the correct positioning of the inspection windows, which leads to accurate, repeatable defect detection.



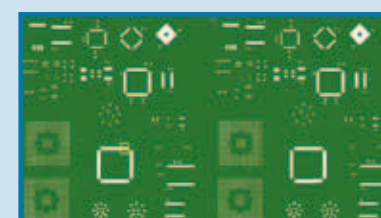
Local Multi-Fiducial Mark Function



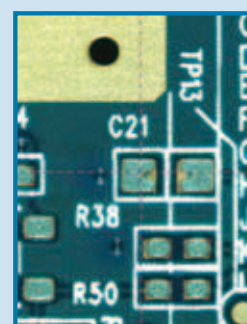
3D Solder Paste Height Profile Board View



2D Color Board View



CAD Map



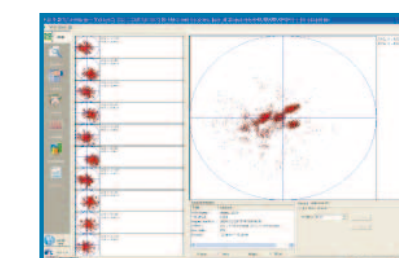
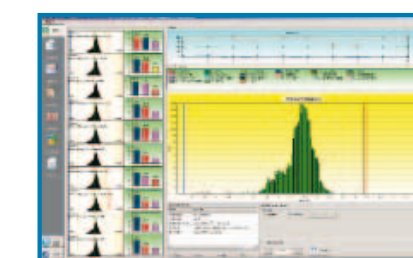
2D Real Image

INTUITIVE STATISTICAL PROCESS CONTROL (SPC)

- ▶ Customer-oriented SPC/SFC system sorts information by board, panel, time, defect and many other methods. This helps the user collect and receive statistics systematically.
- ▶ In most programs, we provide a standard report and Excel format report for the user to select from.

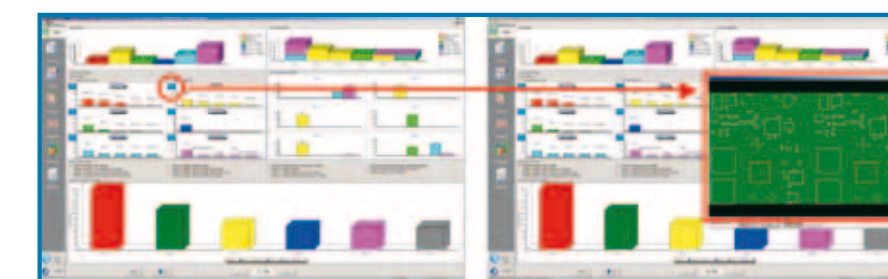
FAIL ANALYSIS HISTOGRAM

Reviews the volume (V), area (A), height (H), XY Shift and the top 3 information items of a board, so the user can clearly identify differences in solder pastes. By the following shift figures, we can conclude there is a big variation in the printer results.

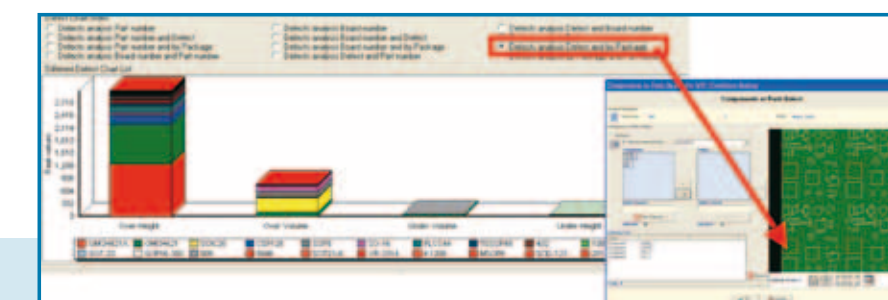


TOP 5 ANALYSIS

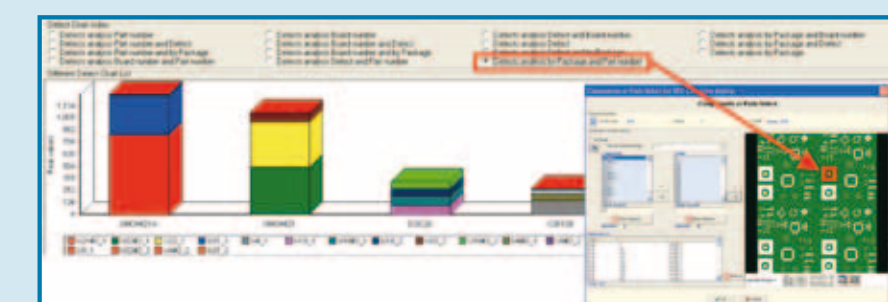
Displays the defect type and defect component rank. System also can link to the CAD map to display the position of the selected defective component; it's easy for the user to identify the component then check and analyze defects.



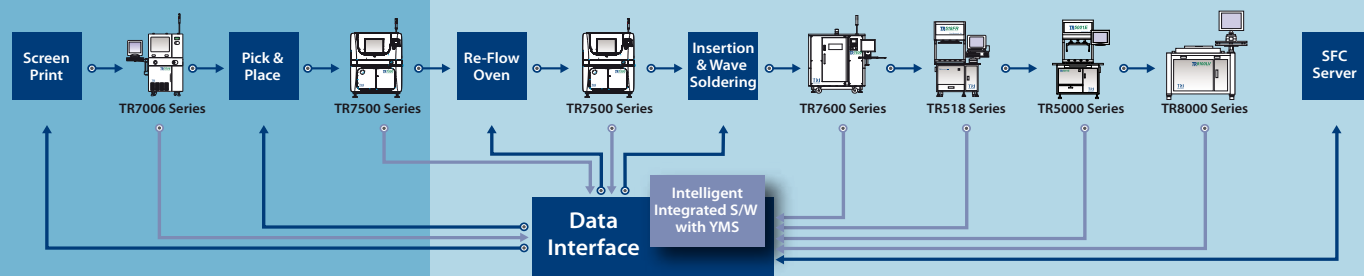
ANALYZE DEFECTS BY TYPE



ANALYZE DEFECTS BY COMPONENT



YIELD MANAGEMENT SYSTEM*

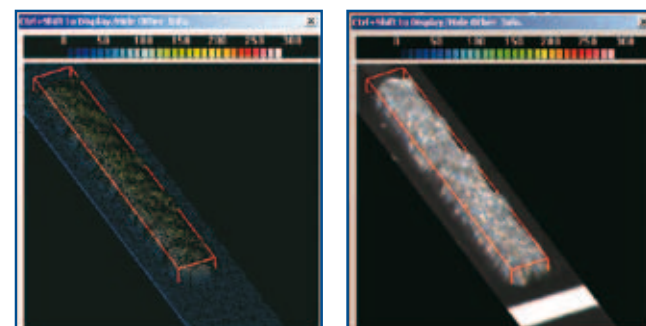


- Testers enable process capability control
- Real time defect information integration and analysis
- Defect knowledge management

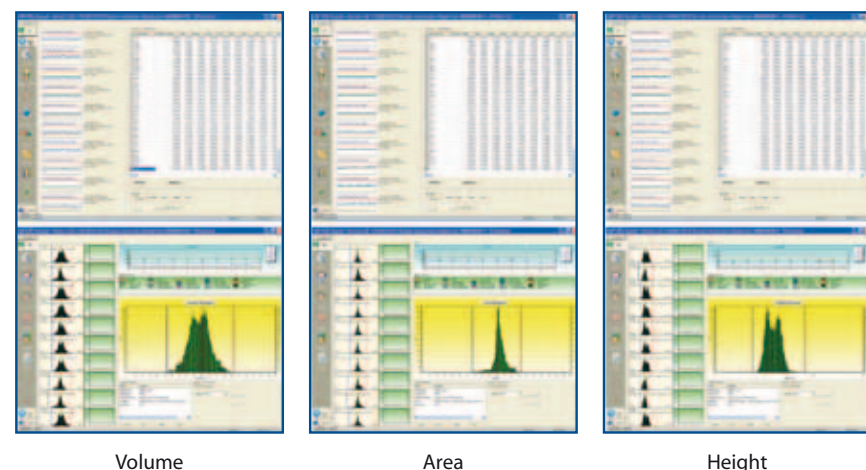
* Optional

TR7007 SII SERIES

3D IMAGES

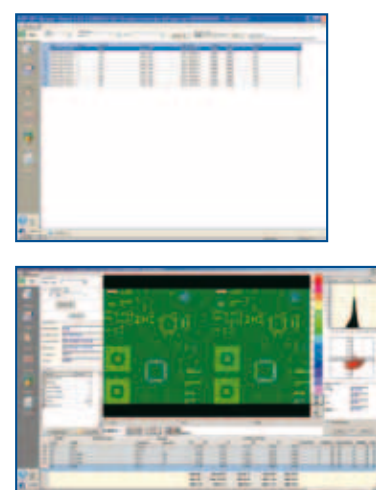


V, A, H AND OTHER CHECKS

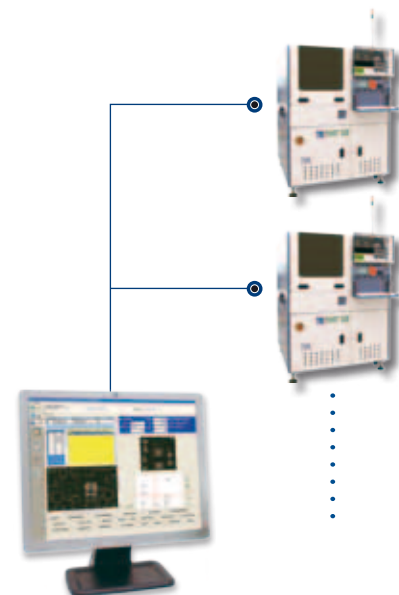


PCB VIEW

A color interface displays solder volume status (area, height, shift X/Y)



CONTROL CENTER



OPTICAL AND IMAGING SYSTEM

Camera Type	4MP camera
Optical Resolution	10µm or 15µm (factory setting)
Field of View	10µm 20.00 x 20.00mm 15µm 30.00 x 30.00mm

INSPECTION FUNCTIONS

Defects detected	Insufficient paste, excessive paste, shape deformity, missing paste and bridging
Measurement	Height, area, volume and offset

MECHANICAL STAGE

X-axis linear motor and linear scale with DSP-based motion controller	
XY Resolution	0.5µm
Z Resolution	1µm

INSPECTION SPEED

10µm	Up to 90cm ² /sec
15µm	Up to 200cm ² /sec

INSPECTION PERFORMANCE

Volume Repeatability	Calibration Target (at 3 Sigma)	<1% on TRI certification target
Height Repeatability	Calibration Target (at 3 Sigma)	<1% on TRI certification target
	Solder GR&R (± 50% Tolerance)	<<10% @ 6 Sigma
Effective Depth of Focus	±5mm	
Height Resolution	0.4µm	
Height Accuracy	1.5µm on certification target	
Max. Solder Paste Size	12800 x 10240µm	
Min. Solder Paste Size	100 x 100µm	
Min. Solder Paste Pitch	100µm	
Max. Height Range	10µm 600µm 15µm 550µm	

PCB AND CONVEYER SYSTEM

Board Size	TR7007 SII	50 x 50mm – 510 x 460mm
	TR7007L SII	50 x 50mm – 660 x 610mm
	TR7007LL SII	50 x 50mm – 850 x 610mm

Board Edge Clearance	3mm
Top Side Clearance	40mm
Bottom Side Clearance	40mm
Board Thickness	TR7007 SII 0.5mm – 5mm TR7007L SII/TR7007LL SII 0.6mm – 5mm

Max. Board Weight	TR7007 SII 3kg, 5kg (optional) TR7007L SII/TR7007LL SII 5kg, 8kg (optional)
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DIMENSIONS

Dimensions	TR7007 SII (W) 1220 x (D) 1663 x (H) 2123mm
	TR7007L SII (W) 1400 x (D) 1813 x (H) 2121mm
	TR7007LL SII (W) 1600 x (D) 1813 x (H) 2121mm

Weight	*Signal tower and open keyboard panel included TR7007 SII 920kg TR7007L SII 1075kg TR7007LL SII 1117kg
--------	---

Power Requirement	200-240V single phase, 50/60Hz 3KVA
Air Requirement	0.5Mpa (73psi) compressed air

OPTIONAL

SPC, offline editor, Gerber tool, barcode scanner (linear & 2D) and support pins closed loop function, dual lane, Y-axis linear motor

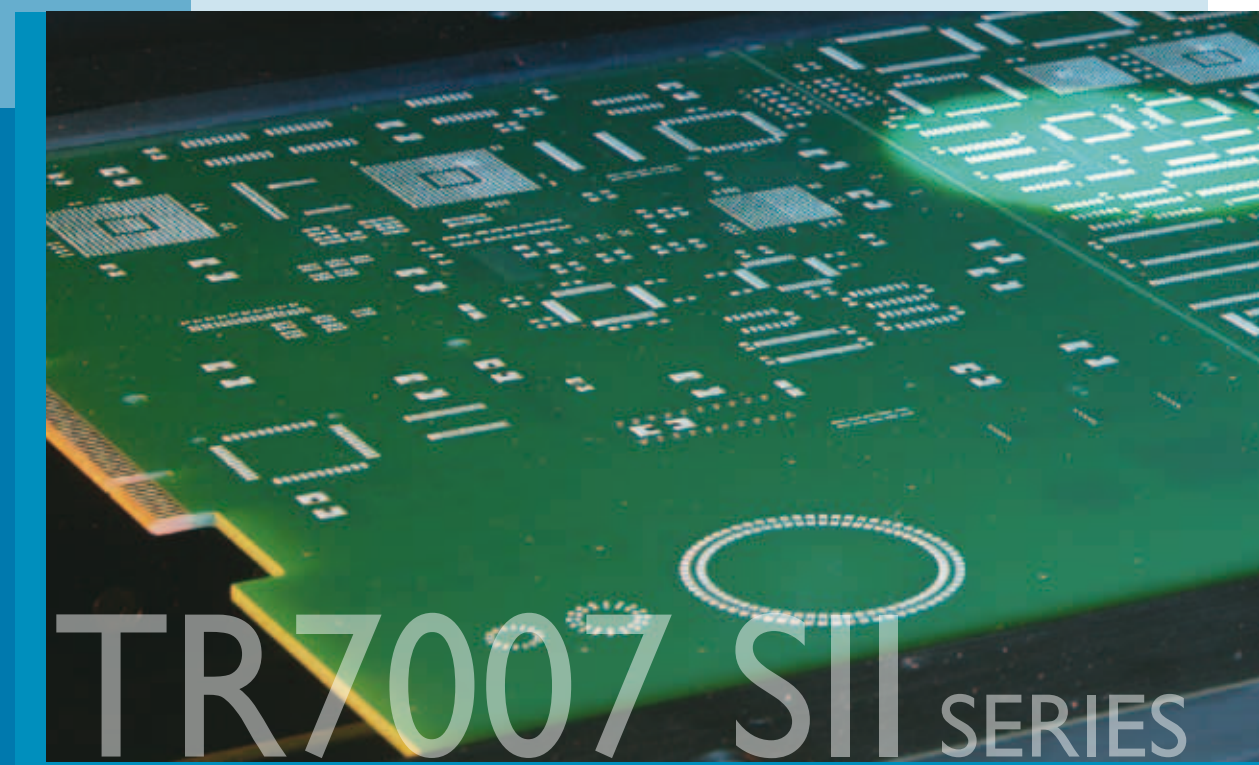
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T R 7 0 0 7 S I I S P I



FASTEST INSPECTION SPEED IN THE INDUSTRY

10µm UP TO 90cm²/SEC; 15µm UP TO 200cm²/SEC

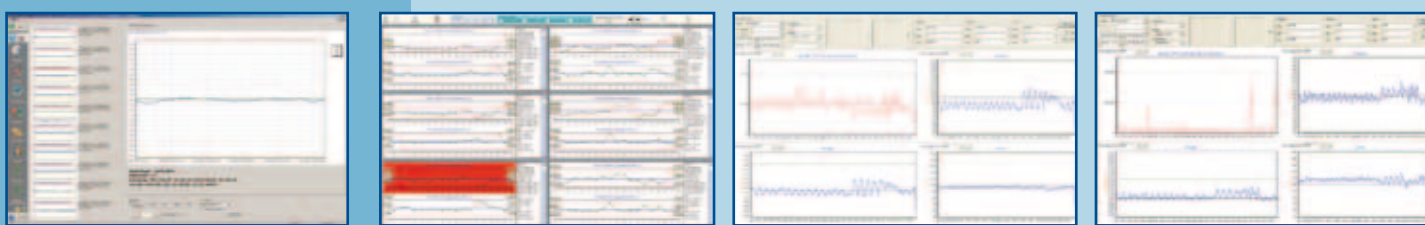
SHADOW-FREE

CLOSED LOOP FUNCTION

ENHANCED 2D IMAGING

AUTO WARP COMPENSTION

SCANNING PHASE MOIRÉ TECHNOLOGY



Control chat

Real Time Monitor

Real time monitor-Cpk by board

Real time monitor-Cpk by type

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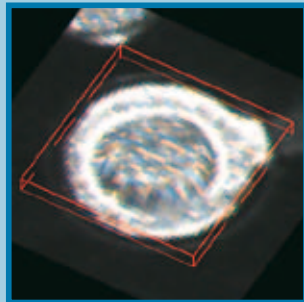
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TEL: +86-21-54270101
FAX: +86-21-64957923
E-mail: shanghai@cn.tri.com.tw



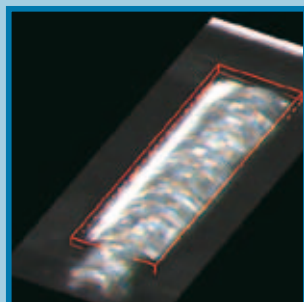
A NEW SPI SYSTEM FOR A NEW GENERATION OF SMT

INDUSTRY'S FASTEST 3D SPI SCANNING

- ▶ Full 3D scans at a maximum 200cm²/sec @ 15µm resolution.
- ▶ Repeatable and accurate results on small CSP, 0201, and 01005 components.



3D Solder Paste Image - BGA



3D Solder Paste Image - IC Pin

3D SOLDER PASTE INSPECTION

- ▶ True 100% inline solder paste inspection.
- ▶ Optimal price/performance ratio.
- ▶ Inspection of area, volume, height, shift, peak height, shape, deformation, registration, bridging and foreign material.
- ▶ Users can define the tolerances for all inspection parameters.
- ▶ Up to 10µm resolution meets the requirements for fine-pitch PCBA and speed-critical applications.

WORLD WIDE SERVICE AND SUPPORT

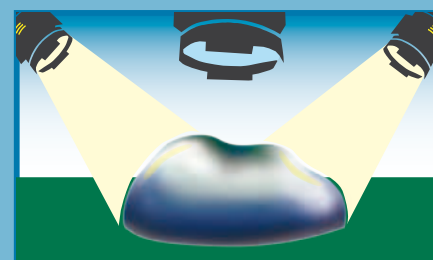
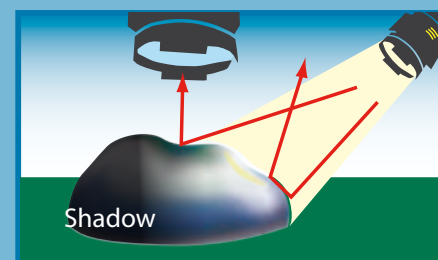
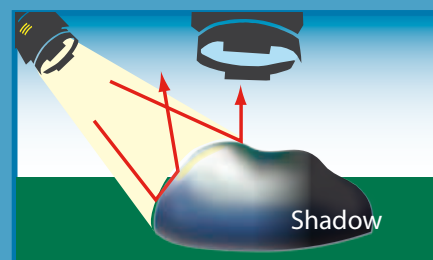
- ▶ A global engineering service network provides instant support.

ADVANCED, HIGHLY ACCURATE TABLE SYSTEM

- ▶ High Resolution linear scale contribute to a more accurate Table System.

EFFECTIVE SOLUTION FOR SHADOWS AND SPECULAR REFLECTION

A traditional single light source may cause multiple reflections and specular reflections on an object's illuminated surface, thus creating shadows on the backside of its surface, affecting 3D solder paste inspection results. The TR7007 SII features a dual light source that operates with TRI's dual-side data merge technology. These features resolve shadow and reflection problems, allowing the TR7007 SII to achieve the most accurate inspection results possible.



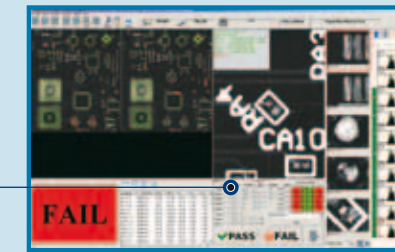
USER-FRIENDLY INTERFACE

The TR7007 SII's new software integrates multiple functions on one screen so users can view all relevant information at once.

- ▶ Displays PCB map and shows total board profile.
- ▶ Both 2D and 3D images are available at run time for defect review and inspection program editing.
- ▶ Displays the details of inspection results and exports the raw data for user tracking, significantly improving manufacturing quality and efficiency.
- ▶ Displays the distribution histogram of inspection results for individual PCBs with the capability to select from volume, area, height and shift X/Y.
- ▶ The parameter-adjusting dialog has been integrated onto the main screen for users to easily check and modify specific solder paste parameters.

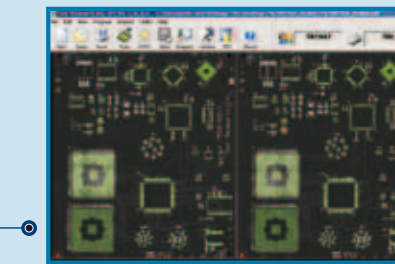


Comprehensive Main Screen

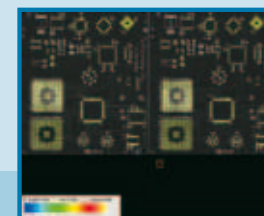


EASY PROGRAMMING ENVIRONMENT

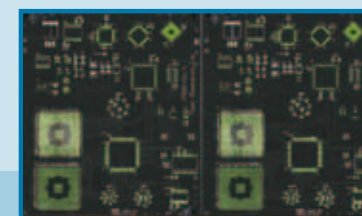
- ▶ Component library-based inspection window can be generated with CAD data.
- ▶ Auto-window generation for CAD-less inspection process.
- ▶ Imports Gerber files for fast programming preparation.
- ▶ Local and multi-fiducial functions ensure the correct positioning of the inspection windows, leading to accurate, repeatable defect detection.



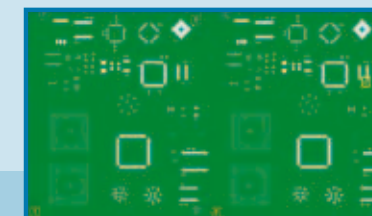
Local Multi-Fiducial Mark Function



3D Solder Paste Height Profile Board View



2D Board View

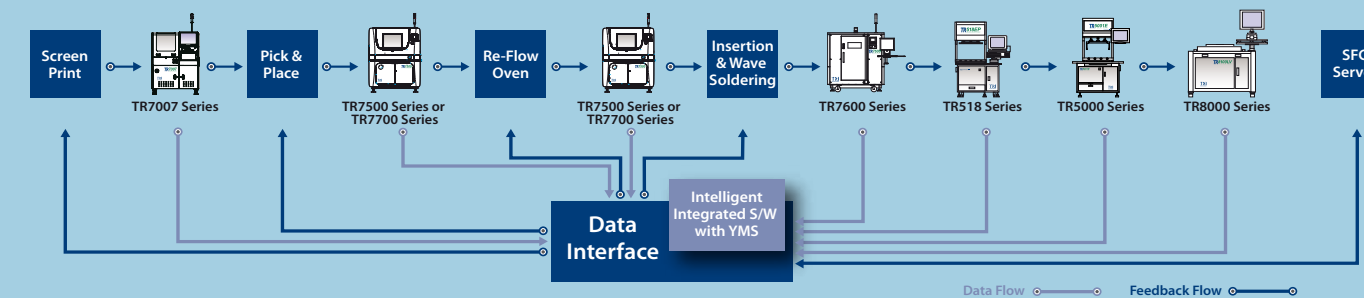


CAD Map



2D Real Image

YIELD MANAGEMENT SYSTEM *



- Testers enable process capability control
- Real time defect information integration and analysis
- Defect knowledge management

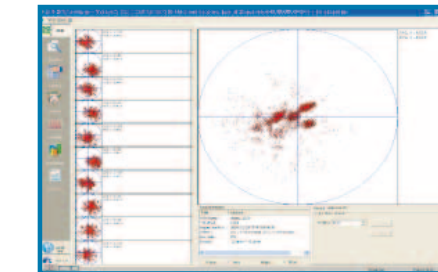
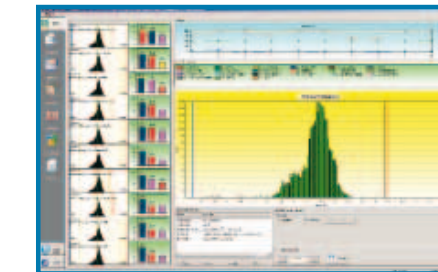
* Optional

INTUITIVE STATISTICAL PROCESS CONTROL (SPC)

- ▶ Customer-oriented SPC/SFC system sorts information by board, panel, time, defect and additional methods. This helps the user collect and receive statistics systematically.
- ▶ Standard and Excel format reports are provided for most programs.

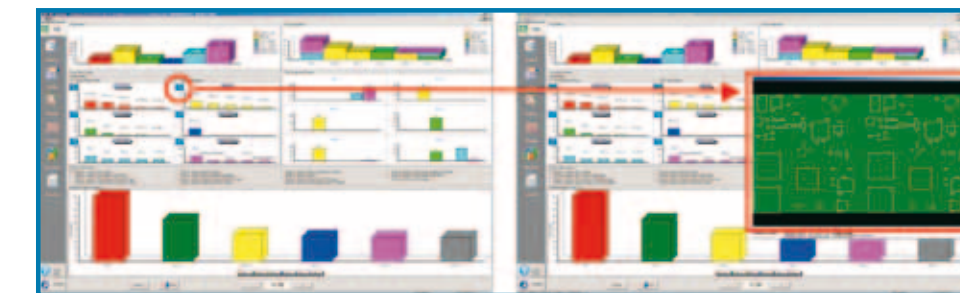
FAIL ANALYSIS HISTOGRAM

Reviews the volume (V), area (A), height (H), X/Y Shift and the top 3 information items of a board so the user can clearly identify differences in solder paste. A significant variation in the printer results can be seen based on the following shift fixtures.

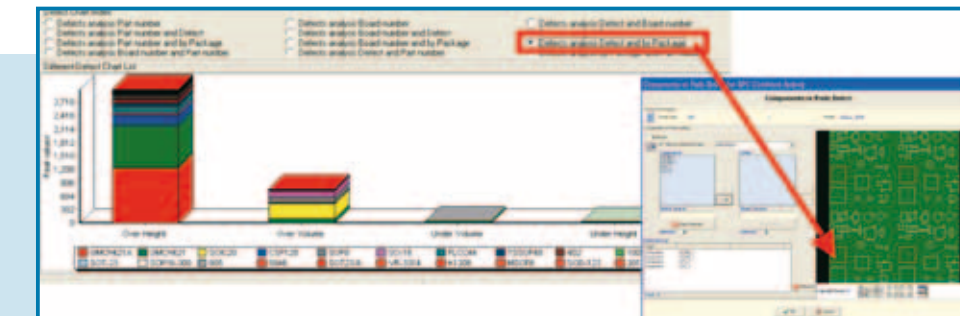


TOP 5 ANALYSIS

Displays the defect type and defect component rank. The system also can link to a CAD map, making it easier to identify the component before verifying and analyzing defects.



ANALYZE DEFECTS BY TYPE



ANALYZE DEFECTS BY COMPONENT

