PowerSpector

G T A z

NEW

In-Line 3D Automatic Optical Inspection systems

√ Revolutionary 3D imaging technology	*True 3D imaging, Side cameras integrated in 3D processing.*
√ High Speed 90Fps USB 3 Vision Cameras	*The latest generation of high speed, high quality cameras No capture card requirements.*
√ 2X FOV over previous Generation	*Up to 50% reduction of cycle time.*
√ Multi-color 4 angle lighting with Line Source Coaxial Lighting and Meniscus Profiler	*reliable solder joint meniscus and pad surface analysis (to find meniscus and paste printing defects)*
√ Inspects:..	*use inspection in all stages of the production process*

- Components: SMT & THT (missing, type, polarity, offset, text, colors, etc.)
- Component Height and Coplanarity
- Solder Paste and CIP (Components in Paste; pre-reflow)
- Soldering: Post Reflow, Post Wave, Selective, Manual

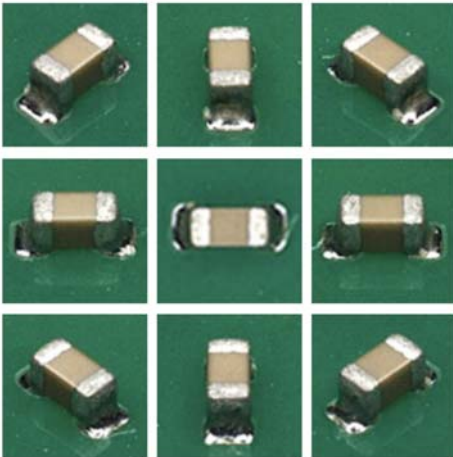|	
√ Flexible classification and reporting scenarios.......................	*integrate AOI efficiently in your existing operations and factory lay-out*
√ Line Sourced DOAL(Direct On Axis Lighting) coaxial lighting system with high resolution Telecentric Optics………………	*inspect solder joints without shadow effects from tall components nearby and accurate inspection model building*
√ Low Noise Large CCD High Speed 24 bit Color Camera	*find defects easier including printing defects on Gold or Cu plated PCB's*
√ Synthetic Imaging and Spectral Analysis................................	*powerful algorithms to achieve an optimal balance between defect detection and false reject levels in shortest time*
√ Triple use of side camera's	*Use for automatic inspection, classification and repair*
√ Prototype mode for 1st off inspection....................................	*program in minutes to verify your production line is set-up correctly before starting full production*
√ In height adjustable optical head	*Compensate for PCB warp and adapt to tall component and sandwich assemblies*

mek®
marantz electronics ltd

PowerSpector GTAz

Hardware and Software Features

Revolutionary 3D imaging

True Stereoscopic imaging using 9 cameras. Full colour 3D allows the ability to actually see the side of components rather than extruded 2D images. Using the addition of a 4th LED white light

0.928
0.936
0.916
0.940
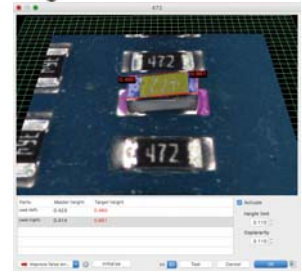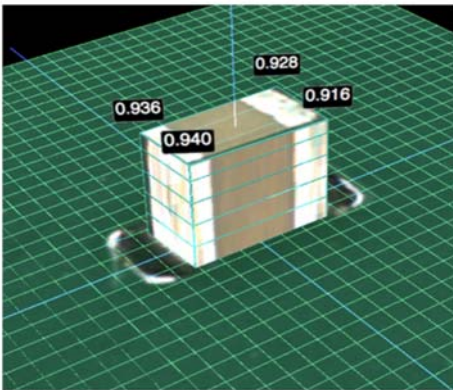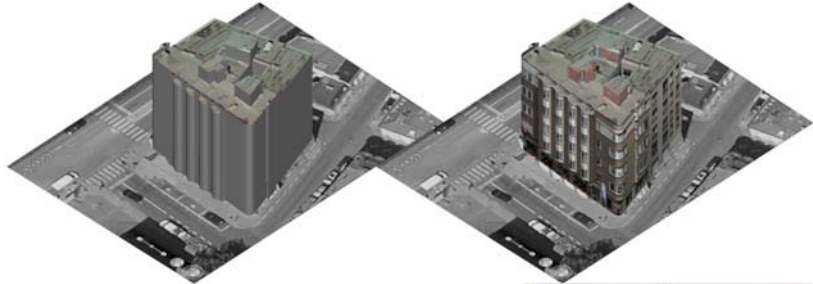
The perfect combination of 3D and 2D inspection

Height, tilt and coplanarity measurement. Pin Height measurement Component Presence Absence, Polarity, Value, Angle, Offset, Colour, Extra part detection, Solder ball detection, Solder profile analysis and short detection. The thickness of chip capacitors in combination with colour makes a more reliable inspection when checking chip capacitors value.
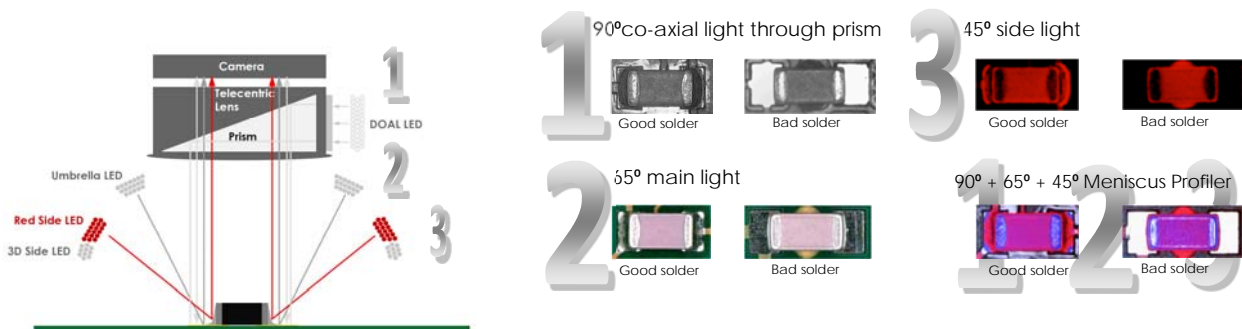
Unique 3D Stereoscopic Vision

Utilizing the full 9 cameras of the MEK camera head. The image differential are merged and a vectorised map of the component is created. Then analyzed based on the programmers applied tolerances. The vectorised map of the components removes the minor imperfection of the component surface giving more accurate measurement of height and surface angle of the component with reduced chance of false readings.
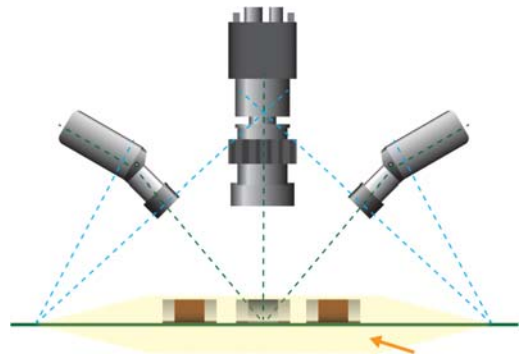
### Omnidirectional multi angle, multi color LED lighting

Optimal light no matter component direction — 3D color profile of solder meniscus — Reliable defect decision by the software — Decide Good Solder, No Solder, Lack of Solder and Too much solder for SMT and THT solder joints

Camera
Telecentric Lens
Prism
DOAL LED
Umbrella LED
Red Side LED
3D Side LED

1
2
3

1 90° co-axial light through prism
Good solder   Bad solder

2 65° main light
Good solder   Bad solder

3 45° side light
Good solder   Bad solder

90° + 65° + 45° Meniscus Profiler
Good solder   Bad solder

8x Angular Side Sensors (Only available for FDA and FDAz models)

Simultaneously operating, multiplexed side view sensors with CameraLink interface — 45/45 arrangement — Triple use: Active automatic inspection, classification and repair — clear 9 angles defect review — high magnification 50x (10μm/pixel) — Full Color — Auto highlight — Large sensor pixels — 9 view images also in backup database

mek®
marantz electronics ltd

PowerSpector G T A z

Hardware and Software Features — Continued
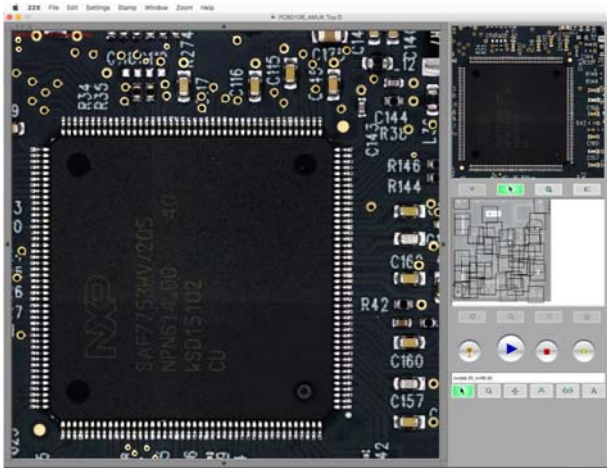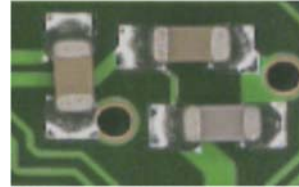

Double size FOV (Field of view)
Up to 2x faster inspection over previous generations of machines. Square FOV combined with circular lighting allows for program rotation without time consuming debugging.

Large pixel image capturing sensor
$18.8\mu m^2$ pixel size — less noise — smooth and detailed image— great dynamic range


High dynamics sensor   Conventional sensor

In Height Adjustable Optical Head
In Z-Axis moving Top Camera, Light and Side View cameras — Adaption to any PCB Thickness — PCB Warp Compensation — Inspection of PCB's with very tall components — Reliable text and/or polarity inspection on tall components
Inspection of "Sandwich" assemblies without need of jigs and multiple inspections
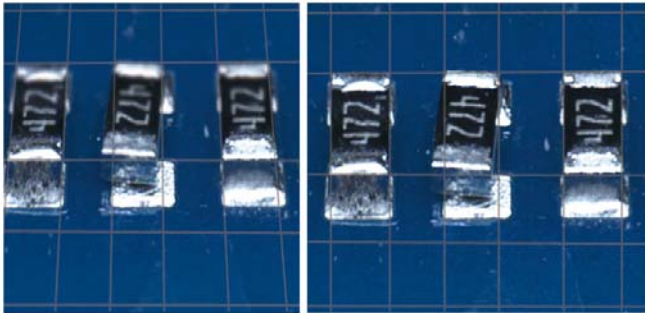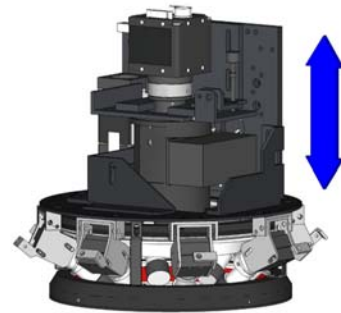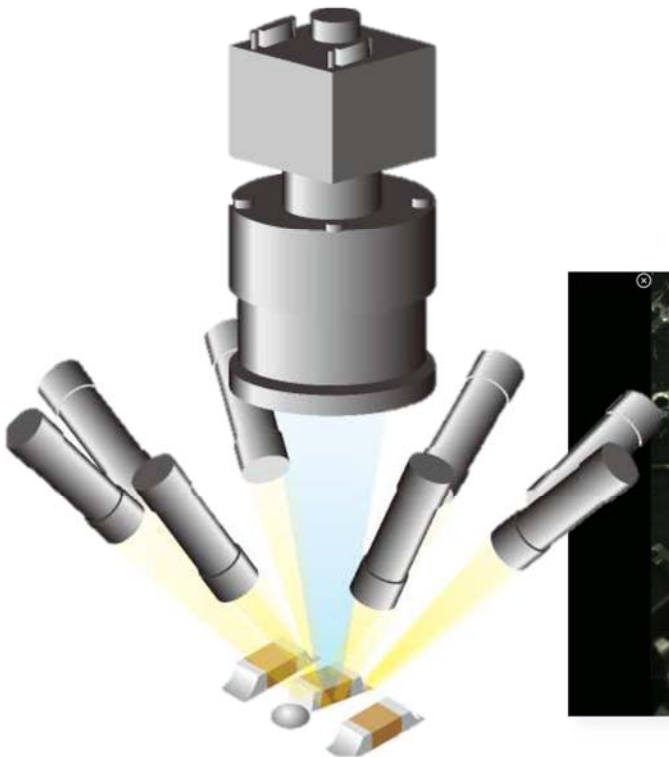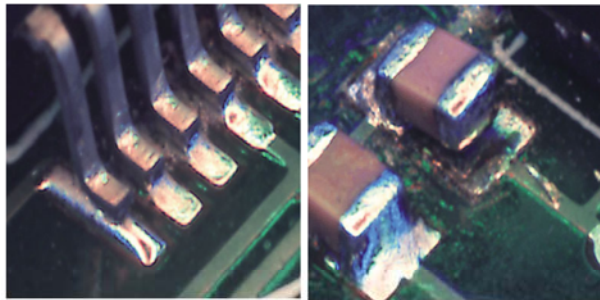

Without Shift&Tilt   Shift&Tilt

Shift & Tilt Side View lenses
Distortion free side images across whole FoV. Every point on the PCB within the FoV has same distance to the capturing sensor despite the angle of the optics

Inline

PowerSpector

GTAz 350L, 650L, 800L

In-Line Series Specifications	PowerSpector GTAz 350L	PowerSpector GTAz 650L	PowerSpector GTAz 800L
Maximum PCB Size	350x250mm (13.8"x9.8")	650x550mm (25.6"x21.6")	800x550mm (31.5"x21.6")
Characteristics			
Product type	Automatic Optical Inspector		
In-line/Off-line	In-Line		
Camera movement	X + Y Direction		
PCB movement	Stationary during inspection		
Parts inspection	Presence, Polarity, Offset, Correctness, Soldering, Height		
Printing/paste inspection	Offset, Smearing, Bridges, Uniformity		
Image Processing	Synthetic Imaging, Spectral Analysis, Greyscale limits		
Image Parameters	Brightness, Hue, Saturation via Filters		
Camera type	Digital *color* Thunderbolt interface 90 Fps		
Camera Field Of View/Resolution	38.5x38.5mm/18.75µm or 19.5x19.5mm/10µm		
Lens	Telecentric lens with built in prism for DOAL Lighting		
Lighting system	Omnidirectional T Quad LED rings: Side White, Side Red, Main, Line Sourced DOAL (Diffused On Axis Lighting (Coaxial))		
Specifications			
Minimum inspection component size	01005" (0.4x0.2mm)(10µm resolution)		
Positioning accuracy	Pixel related Feedback Loop		
Component clearance (top)	30mm (1.2")		
Side Cameras	8x Digital *color* USB 3.0 Vision in 45/45 orientation		
Z-Axis movement range	30mm (1.2")		
Component clearance (bottom)	35mm (1.38″) or 55mm (2.17″) without PCB support lift option		
Maximum PCB Size	350x250mm (13.8" x 9.8")	650x550mm (25.6" x 21.6")	800x550mm (31.5"x21.6")
Movement speed	720mm/s		
Inspection capacity typical	2750ppm		
Electrical requirements	100-240 VAC / 330W		
Conveyor			
Conveyor belt speed	10-500mm/s (0.4-19.7"/s)		
Conveyor configuration	Left>Right, Front rail fixed, Height 830-950mm		
PCB Clamping	Top Justified, Ruler Blade, Top & Edge Clamping, Sensor Stopper		
Minimum board size	50x50mm (2.0" x 2.0")		
Board thickness	0.6-2mm (option 0.6-4mm) (24mils - 79mils)		
PCB warpage compensation	Automatic PCB support Lift with magnetic pins (option)		
Interfacing			
Control PC type	Apple Mac Mini or iMac		
Control interface	SMEMA (conveyer)		
Data interface	USB and Thunderbolt		
Programming Interface	CSV Centroid file (Placement file)		
Repair/Monitor/SPC System/MES-interface	Mek Catch System (Windows 7/8/10) (option)		
3rd party Interfacing (MES) & Data Storage	Enterprise SQL DB/XML Files/Socket (Catch System Option)		
General			
Operating temperature	15-30 deg. C(60-90 deg. F)		
Operating humidity	15-80 % RH		
External size	W740 x D786 x H1236 (29.1" x 30.9" x 48.7")	W1040 x D1077 x H1270 (40.9" x 42.4" x 50.0")	W1190 x D1077 x H1259 (46.9" x 42.4" x 49.5")
Weight	180kg (397lbs)	240kg (529lbs)	290kg (639lbs)

Mek Europe reserves the right to change the design and specifications without notice. © Mek Europe BV, 2016

Represented/Distributed by:

because inspection matters