

MQX.tracE | IN-3D

INLINE 2D / 2.5D / 3D X-RAY INSPECTION
FOR PCB & ELECTRONIC ASSEMBLIES

130 kV

SEALED MICROFOCUS SOURCE

Penetrates dense multilayer boards, shielded packages and heavy copper.

11 μ m

FOCAL SPOT

Separates fine internal detail that a coarser source blurs together.

>2000 $\times$

MAGNIFICATION

Zoom to a single joint without unloading or re-fixturing the board.

610 $\times$ 510 mm

MAXIMUM BOARD SIZE

Takes large backplanes and panelised carriers in one pass.

Powerful. Precise. Production-ready.

An X-ray platform that sits in the production line rather than beside it. Boards are inspected in the flow of the line, and the same machine covers routine 2D screening and full 3D analysis – so a suspect assembly is resolved where it was built, not queued for an offline lab.



Representative image of the MQX.tracE Inline inspection solution

KEY FEATURES

**High-resolution imaging**

Voids, cracks and bond-wire detail separate cleanly, so marginal joints are judged on measurement rather than opinion.

**In-line board handling**

Inspection happens in the flow of the line, removing the load, unload and queue time an offline system adds.

**2D / 2.5D / 3D on one platform**

Routine screening and full 3D analysis on one machine – a suspect board is resolved in place, not sent offline.

**Industry 4.0 integration**

Results feed ERP and SPC directly, so a drifting reflow profile shows up as a trend rather than a scrap report.

**Automated defect analysis**

The same pass/fail criteria every shift, with per-joint measurements kept as process and customer evidence.

**Radiation safety**

A fully interlocked enclosure – no controlled area and no operator dosimetry required on the shop floor.

CAPABLE OF INSPECTION

Configured per recipe and package type; the acquisition mode is selected to suit the feature under examination.

BGA voiding

Non-wet and open joints

Missing ball

Package-on-package (PoP)

Through-hole barrel fill

Double-sided assemblies

Head-in-pillow (HIP)

Solder bridging

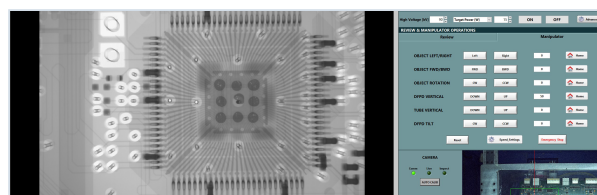
Lifted lead

Bottom-terminated components

Semiconductor wire-bond sweep

Layer separation

INSPECTION SOFTWARE



Acquisition, review and manipulator control from one operator console; results and per-joint measurements are written back to ERP and SPC.

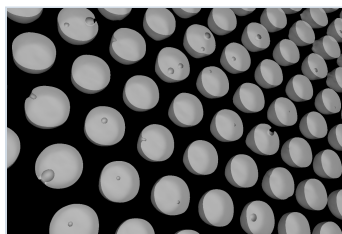
X-RAY & IMAGING

Tube type	Sealed microfocus
Tube voltage	130 kV
Tube power	39 W
Focal spot	11 μ m
Maximum magnification	> 2000 $\times$
Min. focus-to-object distance	0.25 mm
Detector type	High-resolution flat panel (FPD)
Pixel pitch	105 μ m
Bit depth	16 bit
Frame rate	40 fps
Real-time acquisition	Yes
Imaging modes	2D / 2.5D / 3D

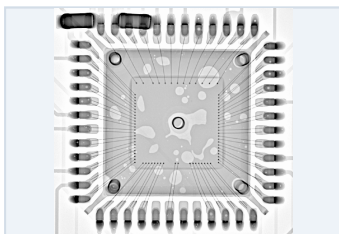
SYSTEM & HANDLING

Min. PCB size	50 $\times$ 50 mm
Max. PCB size	610 $\times$ 510 mm
PCB thickness	0.4 – 6 mm
Top clearance	70 mm
Bottom clearance	40 mm (adjustable)
Warp compensation	$\pm$ 2 mm
Max. board weight	5 – 8 kg
Board handling	Linear motor, pneumatic clamping
Dimensions, with conveyor	3000 $\times$ 2186 $\times$ 1860 mm
Dimensions, w/o conveyor	1600 $\times$ 2186 $\times$ 1860 mm
System weight	2500 kg
Power supply	AC 110/220 V, 50/60 Hz, 4.2 kW
X-ray leakage	< 1 μ Sv/h
Software	MQS imaging suite, Windows

APPLICATION IMAGES



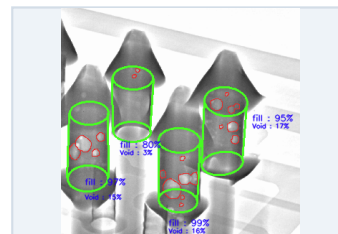
BGA SOLDER VOIDING



QFN DIE ATTACH



THROUGH-HOLE FILL



AUTOMATED FILL & VOID MEASUREMENT

2D & 3D ACQUISITIONS

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