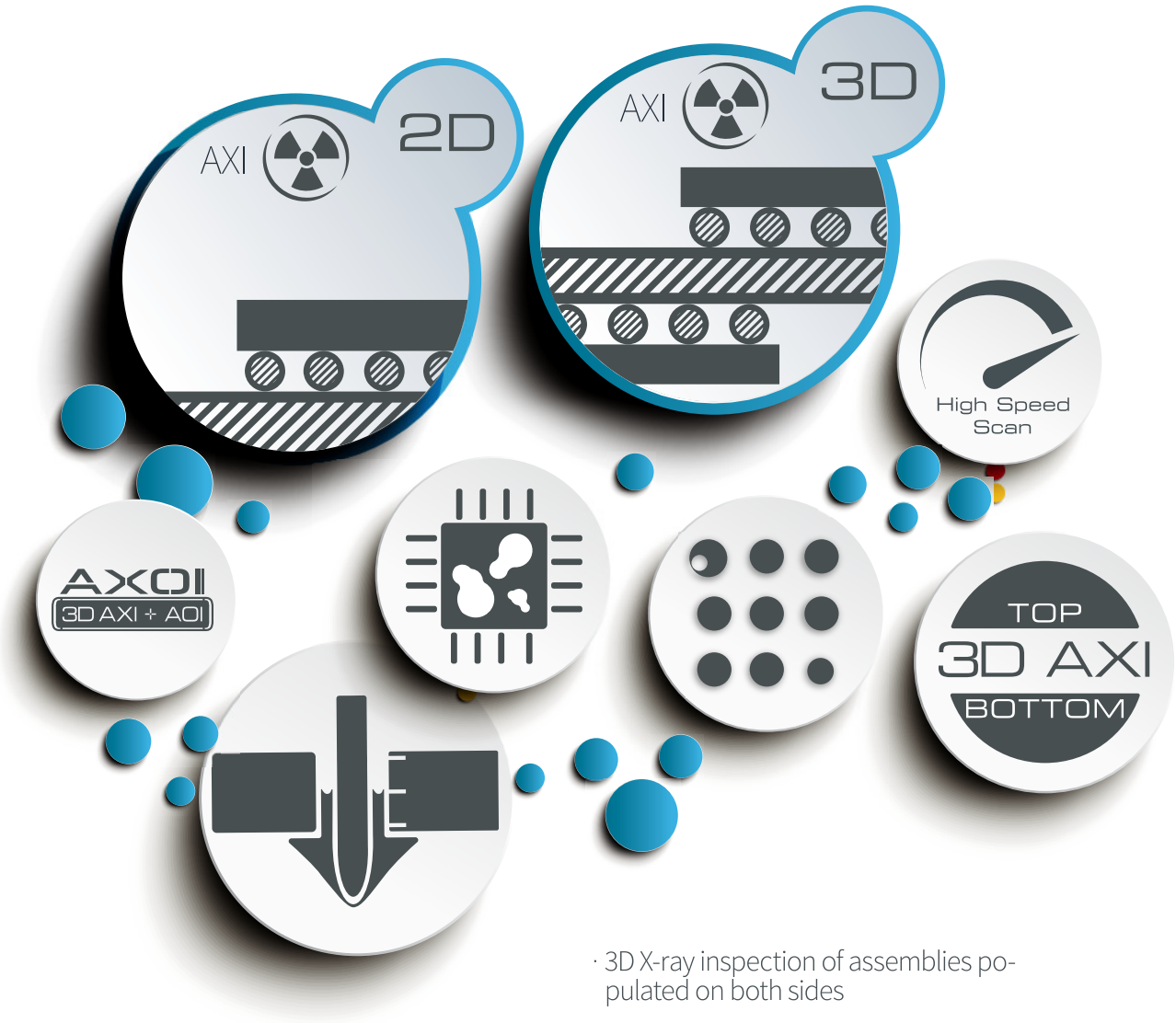
AXI · Technology

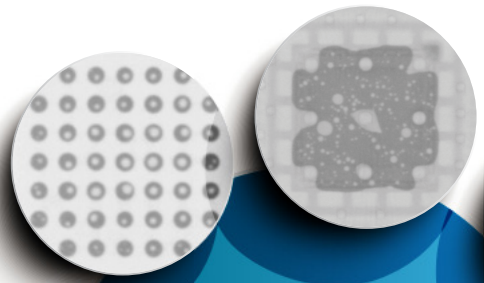
X-ray inspection X-Line · 3D, X-Line · 2D



- 3D X-ray inspection of assemblies populated on both sides
- 2D X-ray inspection of assemblies populated on one side
- optional AOI integration (AXOI)
- fast PCB handling
- low-maintenance system concept
- IPC-orientated inspection

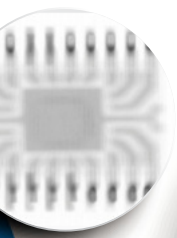
GOPEL electronic
Enjoy Testing

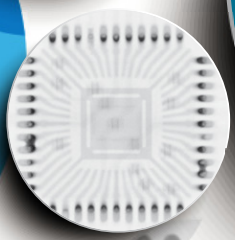
AXOI testing concept



AXI · X-ray inspection

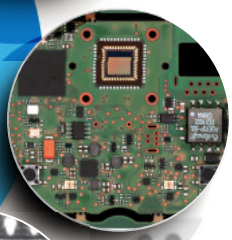
- all-over solder joint check using 3D AXI for IPC-compliant checking of solder joints
- concealed and visible solder joints are reliably tested using 3D AXI

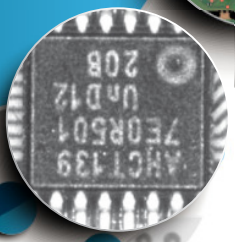




AOI · optical inspection

- test tasks that cannot be performed with 3D AXI are covered by supplementary AOI sensors
- polarity, script recognition, colour recognition, code reading, selective solder joint checking

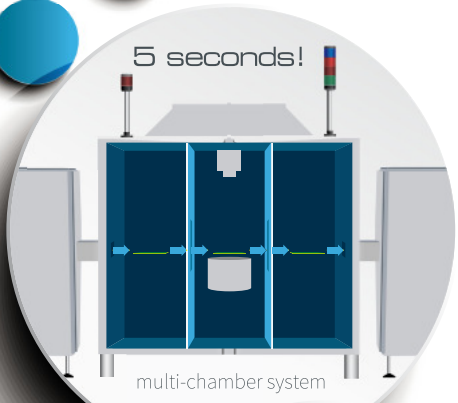




AXOI
3D AXI + AOI

Combination of AXI and AOI

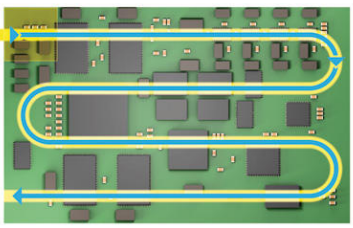
- optional AOI integration for maximum test coverage (AXOI)



multi-chamber system

Fast 3D image capture

- fast 3D X-ray image capture in motion (scanning)
- scanning image capture enables all-over X-ray inspection
- 3D X-ray image reconstruction for inspection of the assembly layer by layer



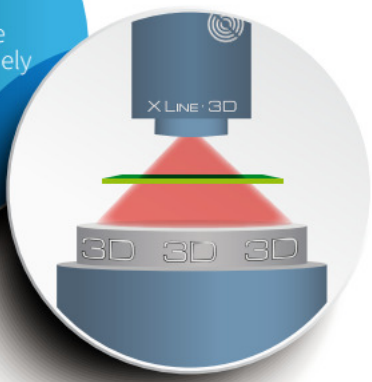
scanning X-ray image capture

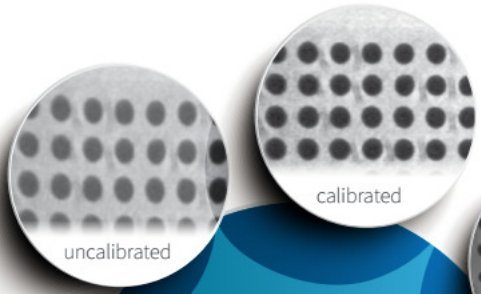
Fast PCB handling

- using a multi-chamber system with double gates

Unique detector

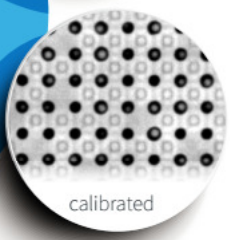
· patented multi-angle detector with extremely high operating life





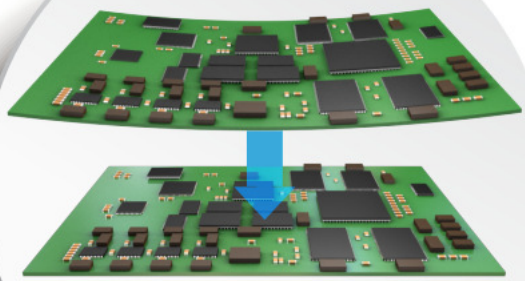
Calibration

· complete geometric and grey-value calibration
· no distorted X-ray images
· uniform component library can be used



Typical applications

· BGA testing, CGA testing
· QFN, DFN and LGA testing
· testing for air pockets
· testing of the rear solder meniscus on gull-wing pins
· full testing of the two meniscuses on J-lead pins
· THT/THR solder penetration, solder volume
· testing of multiple assembly levels (package-on-package, piggyback modules)



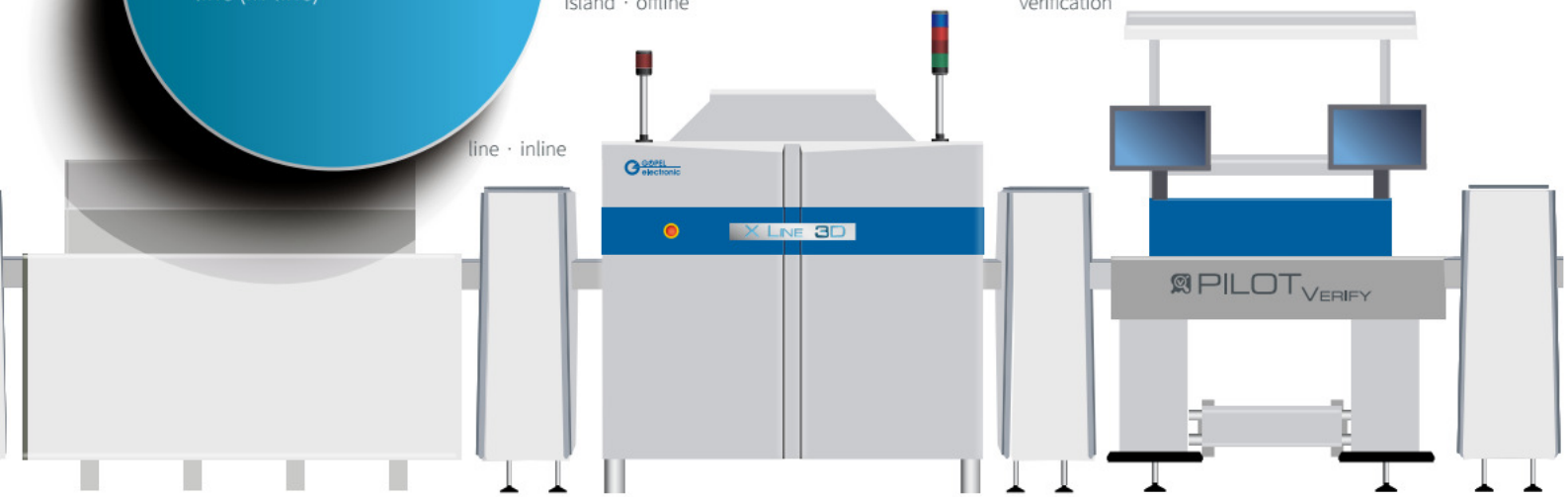
automatic compensation of PCB deflection

System usage

· as an island system (off-line) or directly in the production line (in-line)

island · offline

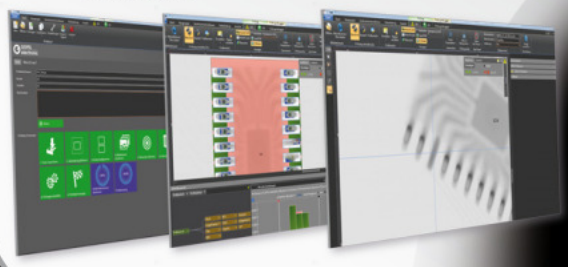
verification



line · inline

PILOT AXI software

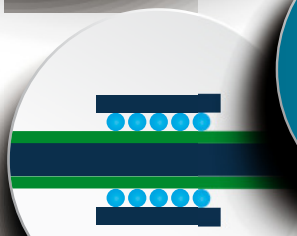
PILOT AXI
Software



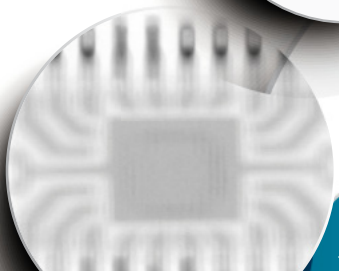
PILOT AXI software

- fast and intuitive creation of test programs with inspection process wizards
- extensive AXI/AXOI component library
- extensive data import functionality (ODB++, GenCAD, Gerber data, insertion data)
- integrated debugging statistics for fast optimisation of inspection programs
- full offline programming away from the production line
- intelligent data management for storing test results
- MES interfaces via PILOT Connect (bidirectional, unidirectional)

- solder penetration testing on THT/THR solder joints

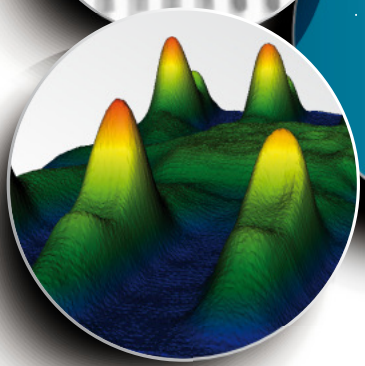


- 3D X-ray inspection for face-to-face assembly



topoVIEW

- visualisation aid for verification and stations



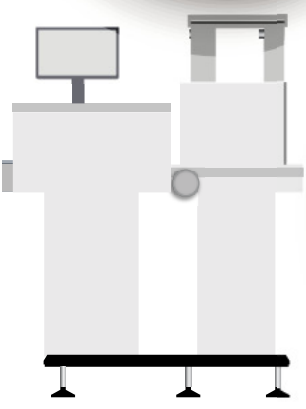
PILOT Connect software
all the data at a glance

- networking of all the inspection data from automatic paste, optical and x-ray inspections
- repair station with a clear view of the AOI, AXI and SPI test data at a glance
- opportunities for process analysis and optimisation by statistically linking the inspection data
- interfaces to ME and traceability systems
- integration with external systems possible
- integrated user management for all related systems and software modules
- convenient data maintenance tools

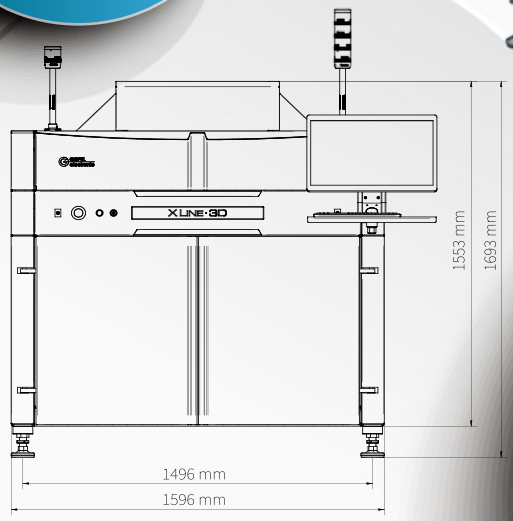
PILOT CONNECT

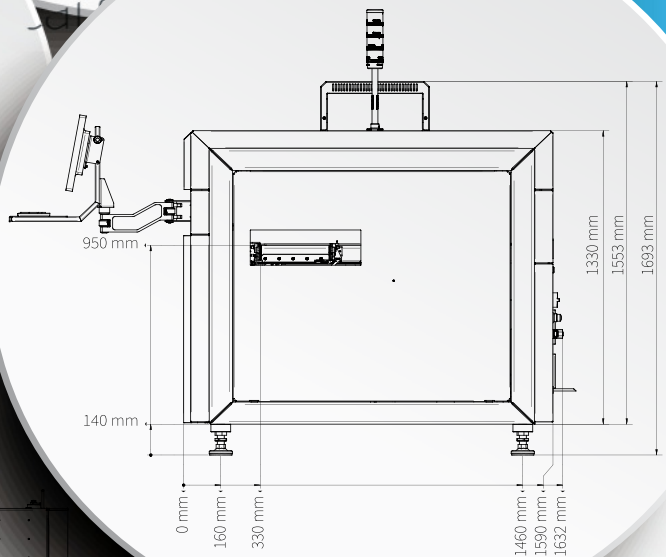
about services:

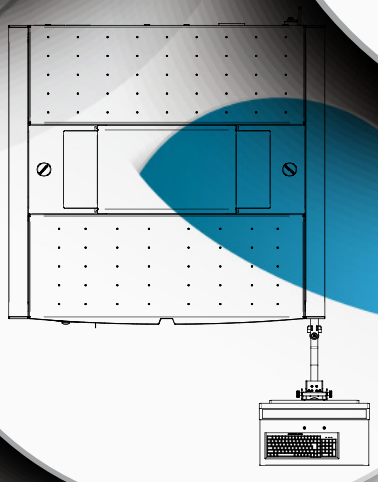
ORACLE MySQL Microsoft SQL Server



Technical specification







Technical specification

Models

versions	X Line · 3D X10
	X Line · 3D X40 / X40*PLUS*
	X Line · 2D

System

in-line interface	SMEMA, Siemens
device connections	230 VAC, 1 kVA, 6 bar compressed air, < 20 Nl/min *
typical power consumption	< 700 W (average)
dimensions (wxdxh)	base unit: 1596 mm x 1540 mm x 1470 mm
	device with tube tower: 1596 mm x 1540 mm x 1720 mm
weight	approx. 2.5 t

PCB handling

transport height	850 mm – 950 mm ± 25 mm
width adjustment	automatic
PCB size (lxw)	max. 450 mm x 400 mm ①
	min. 60 mm x 50 mm ②
PCB thickness	0.5 mm – 5 mm
PCB contact width	≥ 3 mm
PCB weight	≤ 1.5 kg
PCB deflection	automatic compensation (laser)
component clearance of PCB	below: 65 mm
	above: max. 40 mm **
handling time	approx. 5 s (parallel loading/ unloading and inspection)

* referring to 1 min cycle time, ** depending on detail resolution

X-ray technology

tube type	zero-maintenance, sealed micro-focus X-ray tube	
tube voltage	max. 130 kV	
tube current	max. 300 µA	
tube output	max. 39 W	
detector type	multi-angle detector, real-time image capture from different angles	
grey-scale resolution	12 bits	
detail resolution	variable: 6 µm – 24 µm ***	
3D process	digital tomosynthesis	
3D inspection speed	X Line · 3D X10: up to 10 cm^2/s	
	X Line · 3D X40: up to 40 cm^2/s	X Line · 3D X40PLUS: > 40 cm^2/s
calibration	geometric and grey-value calibration, automatic stability monitoring ③	
z-axis adjustment	customisable geometrical magnification by means of motorised vertical positioning of the tube	
X-ray protection	in accordance with the German X-ray Ordinance RöV, three segments, radiation-proof, zero emissions	

*** depending on upper component clearance

Optical image capture technology

resolution	21 µm
field of view	42 mm x 42 mm
lens	telecentric (pixel-adaptive objective)
lighting	multi-spectral lighting, selectable from blue to IR

① basic AOI module: 300 mm (l) x 400 mm (w); extended AOI module: 450 mm (l) x 400 mm (w)
② smaller PCB sizes on request. Results in a longer handling time.
③ up to a PCB size of max. 450 mm (l) x 280 mm (w)

Made in Germany

Accelonix
keeping you ahead.

Accelonix BV
Luchthavenweg 18b • NL-5657 EB • Eindhoven • The Netherlands •
T: +31 40 750 1650 • E: info@accelonix.nl

GÖPEL electronic GmbH
Goeschwitzer Str. 58/60
07745 Jena/Thuringia
0049 3641 · 6896 0 Phone
0049 3641 · 6896 944 Fax
sales@goepel.com
www.goepel.com

GOPEL electronic Enjoy Testing
ISO 9001 certified

sales@goepel.co.uk sales@goepelusa.com sales@goepel.asia sales@goepel.in