# AXI · Technology X-ray inspection X Line · 3D, X Line · 2D







# AXOI testing concept

X Line · 3D/2D – X-ray inspection



### Unique detector

patented multi-angle detector with extremely high operating life

uncalibrated

## calibrated

uncalibrated

O

calibrated

### Calibration

- complete geometric and greyvalue 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

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

island · offline

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X LINE 3D

ine · inline

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verification

# PILOT AXI software



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CONNECT

- integration with external systems possible
- · integrated user management for all related systems and software modules
- · convenient data maintenance tools

# Technical specification



# Technical specification

| Models                |               |   | PCB handling           |   |  |
|-----------------------|---------------|---|------------------------|---|--|
| versions              |               | X Line · 3D X10   | transport height       | 850 mm – 950 mm ± 25 mm                                     |  |
|                       |               | X Line · 3D X40 / X40 <b>PLUS</b>   | width adjustment       | automatic   |  |
|                       |               | X Line · 2D   | PCB size (lxw)         | max. 450 mm x 400 mm <sup>①</sup>                           |  |
| Curatana              |               | _   |                        | min. 60 mm x 50 mm <sup>②</sup>                             |  |
| System                |               |   | PCB thickness          | 0.5 mm – 5 mm   |  |
| in-line interface     | SMEN          | /A, Siemens   | PCB contact width      | ≥3 mm   |  |
| device connections    | 230 V         | AC, 1 kVA, 6 bar compressed   | PCB weight             | ≤ 1.5 kg  |  |
| typical power         | < 700         | I W (average)   | PCB deflection         | automatic compensation<br>(laser)                           |  |
| dimensions (wxdxh)    | base unit:    |   | component clearance of | below: 65 mm  |  |
|                       | 1596          | mm x 1540 mm x 1470 mm  | PCB                    | above: max. 40 mm **  |  |
|                       | devic<br>1540 | e with tube tower: 1596 mm x<br>mm x 1720 mm  | handling time          | approx. 5 s (parallel loading/<br>unloading and inspection) |  |
| weight                | appro         | x. 2.5 t * referring to 1 min cycle time, ** depending on detail resolution                   |                        |   |  |
| X-ray technolo        | ogy           |   |                        |   |  |
| 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 <sup>2</sup> /s  |                        |   |  |
|                       |               | X Line · 3D X40: up to 40 cm²/s X Line · 3D X40PLUS: > 40 cm²/s                               |                        |   |  |
| calibration           |               | geometric and grey-value calibration, automatic stability monitoring <sup>3</sup>             |                        |   |  |
| 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      |                        |   |  |

\*\*\* 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



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