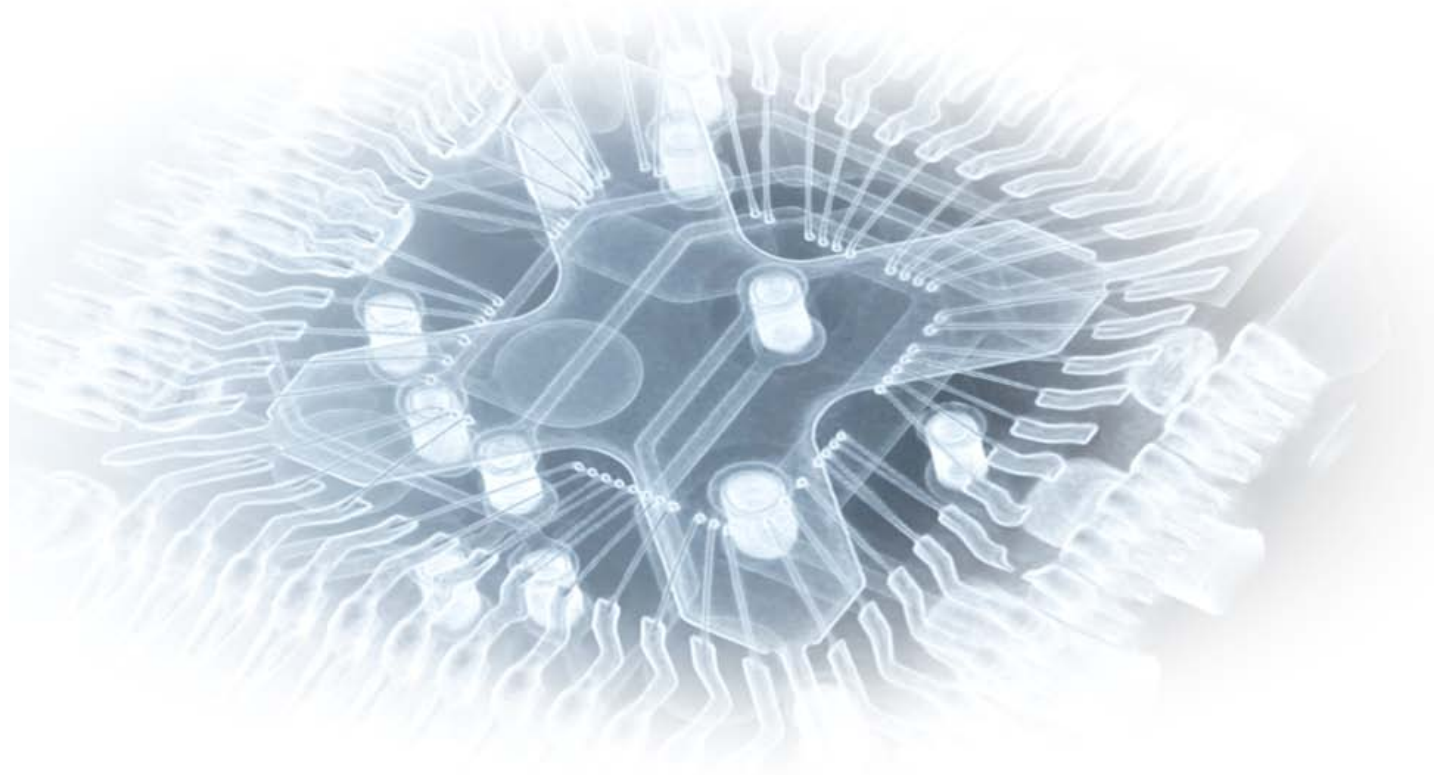


X-ray Inspection Systems

2D AXI / 3D AXI / WAXI



SMT / Semiconductor Analysis Equipment

High-performance X-ray Inspection System

X-eye SF160 Series

- Non-destructive analysis of **semiconductor**, SMT, and electron/electric components
- **Hybrid Tube** Option (160kV/500 μ m, 10,000hrs/filament)
- Dual CT - High-quality CT image / high speed scan

General Product Features

X-ray Tube.	160kV / 200 μ A (option 160kV / 500 μ A)
Focal Spot Size	0.8 μ m
Table Size	460 X 510 mm (option 550 X 650 mm)
AXIS	X, Y, Z, Tilt (70°), Rotate, Y-aft, Cone Beam R
Detector	1.6M Pixel FPD
CT Scan Method	Oblique CT / Cone Beam CT
Dimension	1,340(W) x 1,950(D) x 1,630(H)mm / 2,000kg



Entry-level X-ray Inspection System

X-eye 5100 Series

- Non-destructive analysis of **semiconductor**, **SMT**, and electron/electric components
- Inspection S/W for mass production
- Various convenient functions – Easy of use

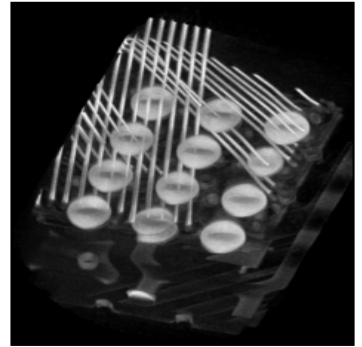
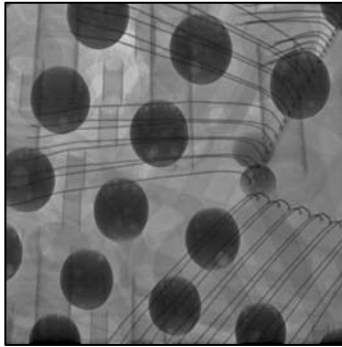
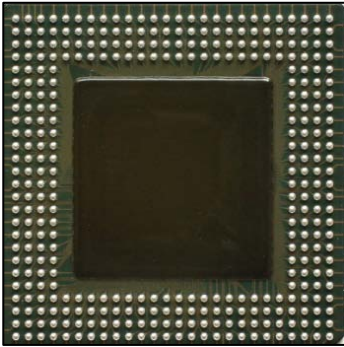
General Product Features

X-ray Tube.	100kV / 200 μ A (option 130kV / 200 μ A)
Focal Spot Size	5 μ m
Table Size	460 X 340 mm (option 550 X 550 mm)
AXIS	X, Y, Z, Tilt (\pm 50°)
Detector	1.6M Pixel FPD
Dimension	1,270(W) x 1,025(D) x 1,460(H)mm / 900kg

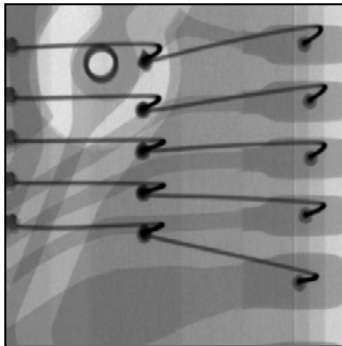
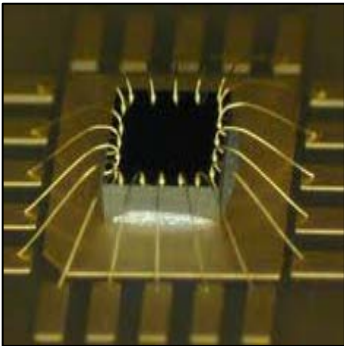


IMAGE GALLERY

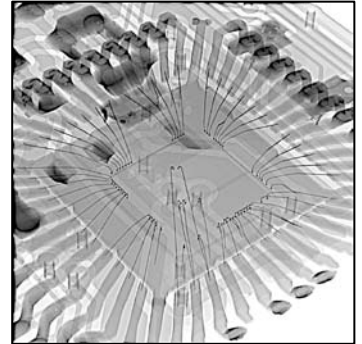
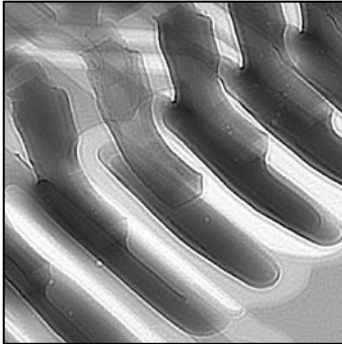
BGA Cold Solder



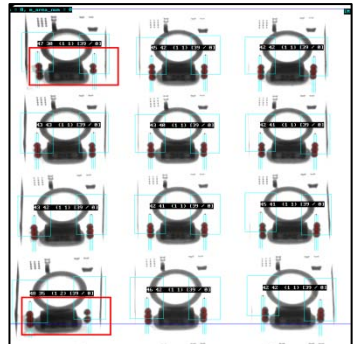
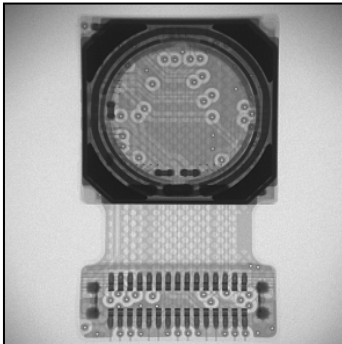
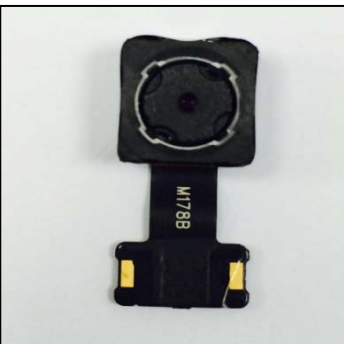
Stacked Die



QFP



Camera Module



AXI Auto X-ray Inspection

3D AXI X-eye 6300

- High speed **3D** In Line Inspection System (~4.3 sec/FOV)
- **Hybrid Tube** for In-line purpose
- Best Solution for both-side layered PCB



General Product Features

X-ray Tube	160kV / 500 μ A
Focal Spot Size	0.8 ~ 15 μ m
Table Size	50 x 50 ~ 330 x 250 (mm)
Detector	10M Pixel FPD
Objects	BGA, Through Hole, BGA, Chip, QFN, QFP
Defects	BGA Short, Bridging, Open, De-wet, Void, Poor Hole Filling
Dimension	1,356(W) x 1,880(D) x 1,695(H) / 4,000kg

2D AXI / WAXI X-eye 6200

- High speed **2D** In Line inspection System (0.5 sec/FOV)
- **Hybrid Tube** for In-line purpose
- **WAXI** : Wire Automatic X-ray Inspection

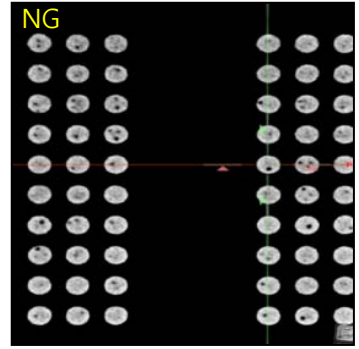
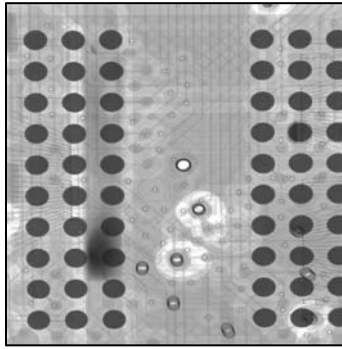
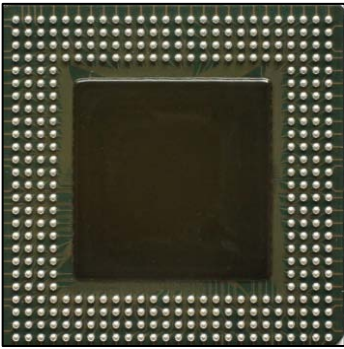


General Product Features

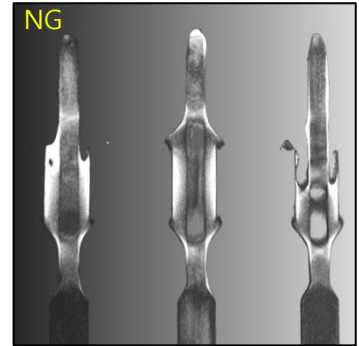
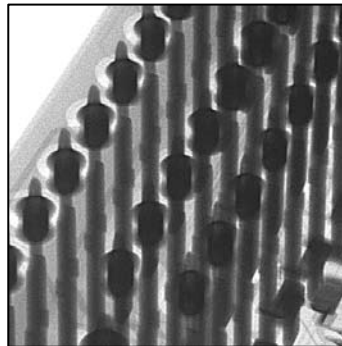
X-ray Tube	160kV / 500 μ A (option 130KV / 300 μ A)
Focal Spot Size	0.8 ~ 15 μ m
Table Size	50 x 50 ~ 330 x 250 (mm)
Detector	1.6M Pixel FPD
Objects	BGA, Chip, QFN, QFP, Wire Bonding
Defects	BGA : Short, Bridging, Void Chip : Manhattan, miss align, short Wire bonding : sweep, broken, double bonding, missing
Dimension	1,000(W) x 1,360(D) x 1,450(H)mm / 2,000kg

IMAGE GALLERY

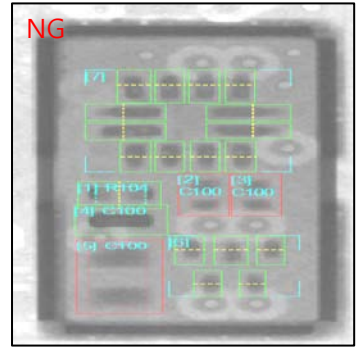
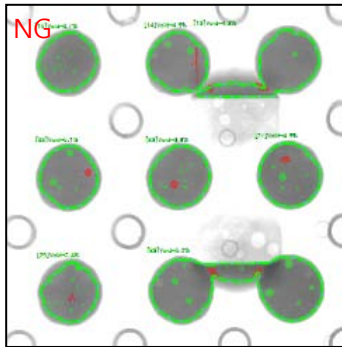
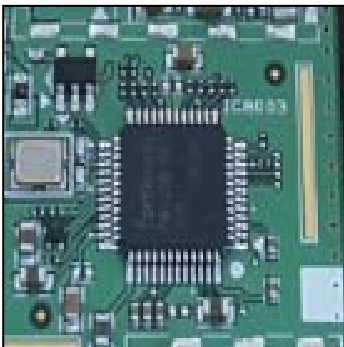
BGA Void / 3D Inspection



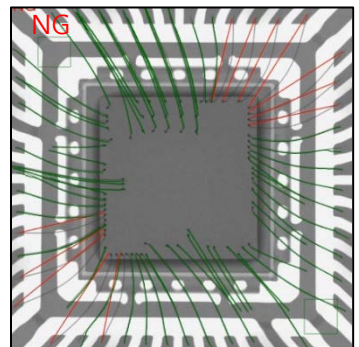
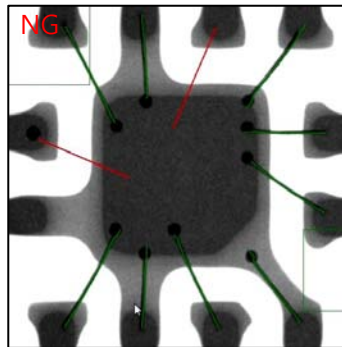
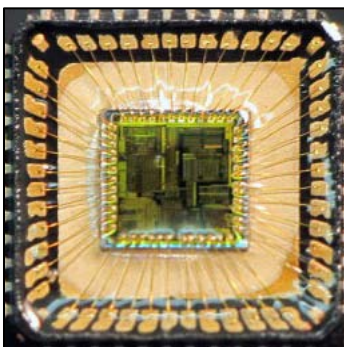
Through Hole Filling / 3D Inspection



SMT Chip BGA / 2D Inspection



Wire Bonding / 2D Inspection



High-end X-ray Inspection System

X-eye NF120

- Non-destructive analysis system for Wafer Level Packaging
- High resolution image, using Dual Type CTs
- TSV, Micro Bump, Pattern



General Product Features

X-ray Tube	120kV / 200μA
Focal Spot Size	200 nm
Table Size	Max 300mm (Ø) Wafer
AXIS	X, Y, Z, Tilt, Rotate
Detector	3.2 M Pixel FPD (Option:6.7M / 10M)
Dimension	1,800(W) x 2,700(D) x 2,670(H)mm / 6,500kg
Scan Method	Oblique CT / Cone beam CT

3D X-ray Inspection System for POP

X-eye 6000 POP

- 3D In-Line inspection system for POP
- Good-NG analysis of interconnection, using 3D CT
- Detection speed : Max. 5 sec/unit

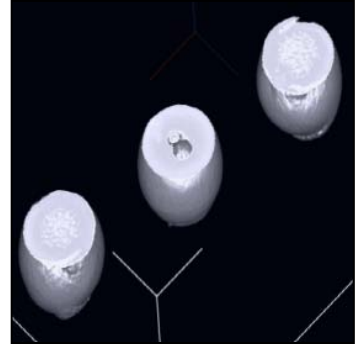
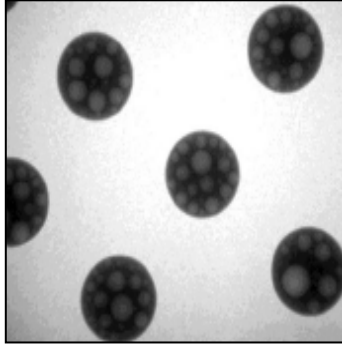
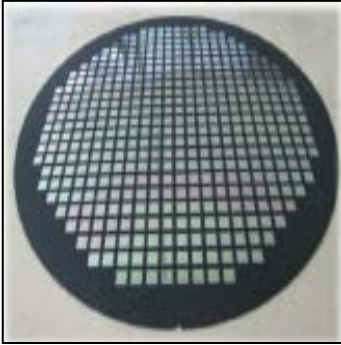


General Product Features

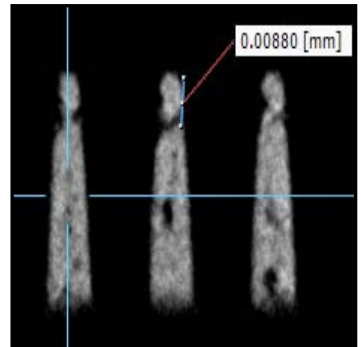
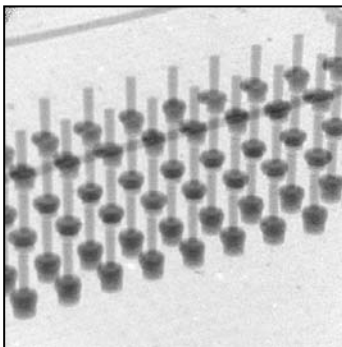
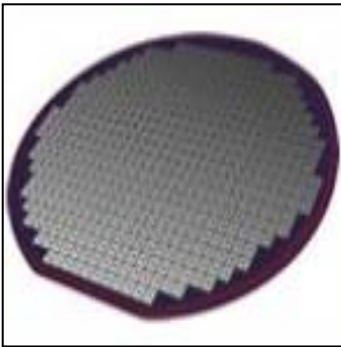
X-ray Tube	130kV / 200μA
Focal Spot Size	6~15 μm
Detector	8M Pixel FPD
Chip Size	Min: 8 x 6 , Max : 20 x 20
Inspection Item	non-wet, open, short, big/small ball
Dimension	2,300(W) x 2,400(D) x 2,120(H)mm / 4,800kg

IMAGE GALLERY

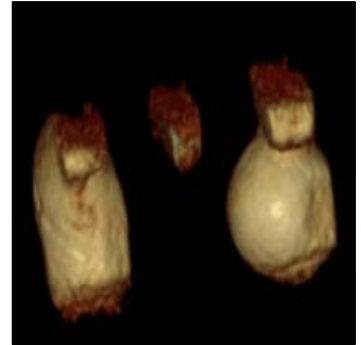
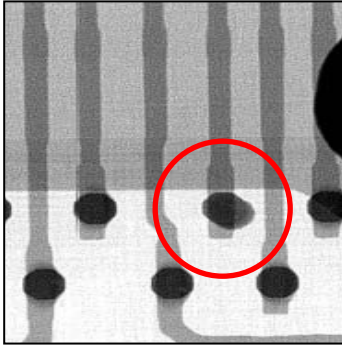
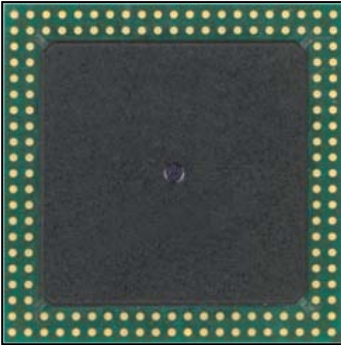
Wafer Bump Void



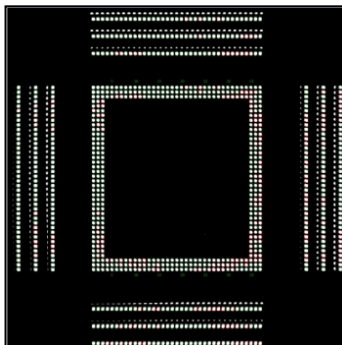
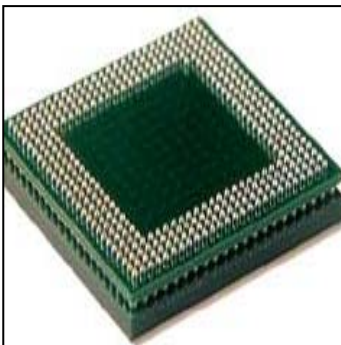
Wafer TSV Void



Cu pillar Bump non wet



POP Short non wet



High-power 3D X-ray Inspection System

X-ray Inspection System for large sized metal products

X-eye 7000B

- Non-destructive analysis system for the large-size components
- Various options for Tubes and Detectors
- High power X-ray tube option

General Product Features

X-ray Tube	160kV / 3mA
Focal Spot Size	6 μ m
Table Size	Max 600mm (\varnothing) X 900L mm
AXIS	X, Y, Z, R, T, FDD
Detector	1 M pixel
Dimension	2,260(W) x 1,800(D) x 2,000(H)mm / 3,500kg
CT Scan Method	Cone beam CT



X-ray Inspection System for large sized metal products (Mass products)

X-eye 7000R

- Automotive components, Magnesium, die-casting
- Designed for total inspection, using convenient Loading / Unloading
- Automatic inspection of Porosity / Crack

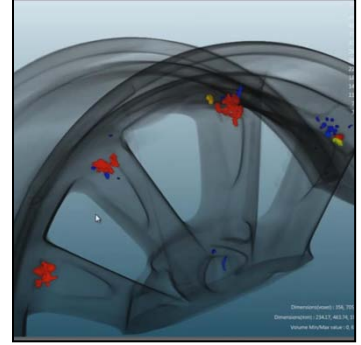
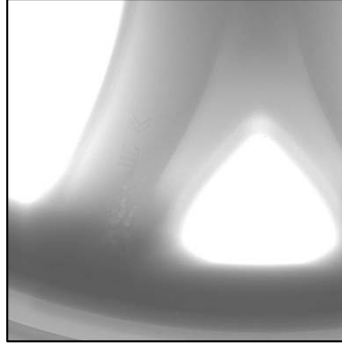
General Product Features

X-ray Tube	160kV / 11.25mA
Focal Spot Size	0.4 mm
Table Size	Max 400mm (\varnothing) X 800L mm
AXIS	X, Y-t, Y-d, Z-t, Z-d, R, Tilt-t, Tilt-d
Detector	4.6 M pixel
Dimension	2,550(W) x 3,150(D) x 2,450(H)mm / 6,000kg
CT Scan Method	Cone beam CT

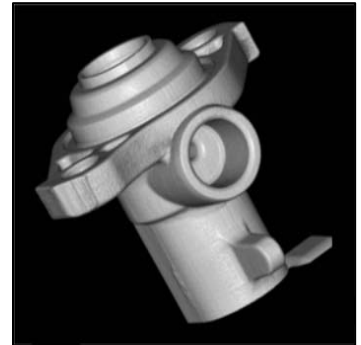
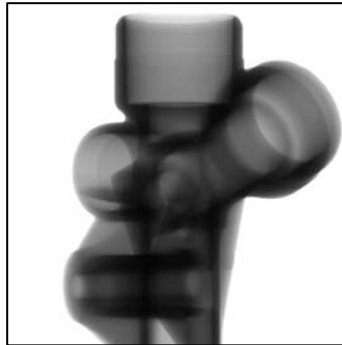


IMAGE GALLERY

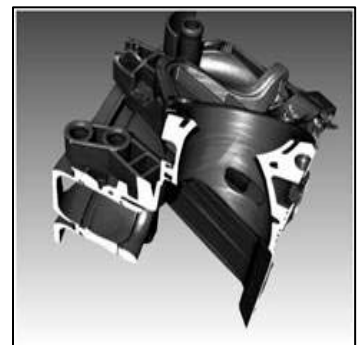
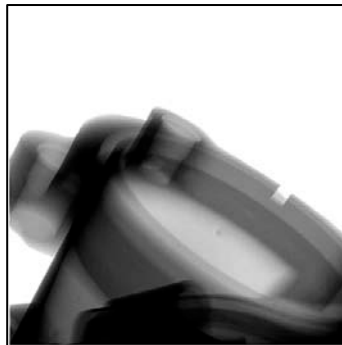
Wheel Porosity



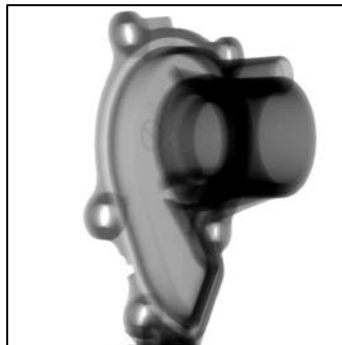
Power Steering Crack



Air Intake Manifold



Water Pump Porosity



High-power 3D X-ray Inspection System

X-ray Inspection Equipment for small & medium Sized Products

X-eye 7000BS



- Non-destructive analysis system for small & medium sized components
- High-resolution image, using Open Tube
- Enable to get CT image, using continuous scan (5 min.)

General Product Features

X-ray Tube	160kV / 1mA
Focal Spot Size	6 μ m
Table Size	Max 300mm (\varnothing) X 300L mm
AXIS	X, Y, Z, R, T
Detector	1.6 M pixel
Dimension	1,840(W) x 1,860(D) x 1,700(H)mm / 2,000kg
CT Scan Method	Cone beam CT

High power CT X-ray Inspection system

X-eye PCT



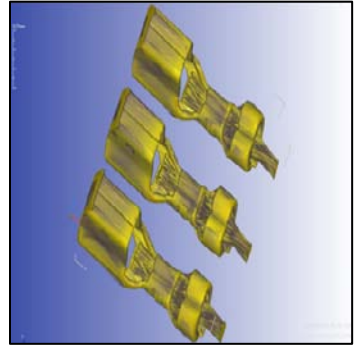
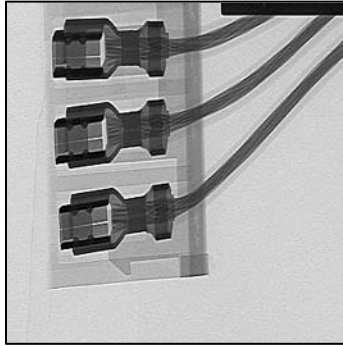
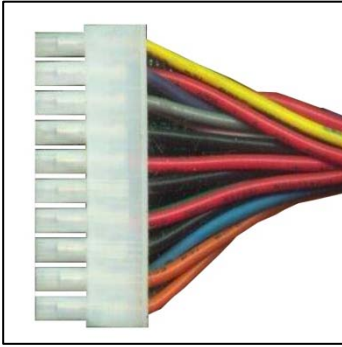
- Enable precise movement of axis with Anti-vibration table
- Various options for High power X-ray Tubes
- Enable inspection of large sized products

General Product Features

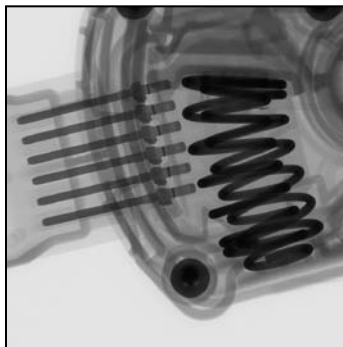
X-ray Tube	225kV / 3mA (option 320kV / 450kV)
Focal Spot Size	6 μ m (option 0.4 mm)
Table Size	Max 500mm (\varnothing) X 1,000L mm
AXIS	X, Y, Z, R, Z ¹ , Z ²
Detector	4 M pixel
Dimension	2,700(W) x 1,800(D) x 2,200(H)mm / 10,000kg
CT Scan Method	Cone beam CT

IMAGE GALLERY

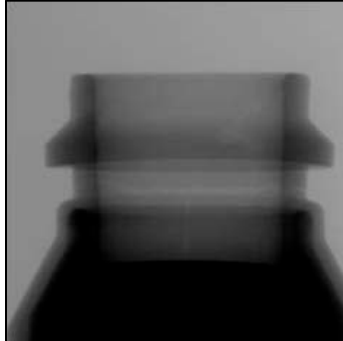
Connector



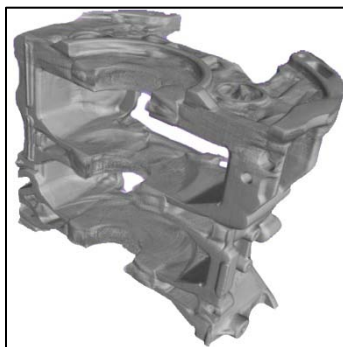
Car Accelerator



Plug Coil



Die Casting



Other AXI Auto X-ray Inspection

Chip Counter

X-eye 4000A



- Inspection speed : 9sec (Based on Ø180 reel)
- Counting Chips and nonstandard components in reel.
- No need additional Inspection Parameter Setting

General Product Features

X-ray Tube.	100kV / 200µA
Focal Spot Size	5 µm
Table Size	430 X 430mm
Z-AXIS	Z axis Auto Moving
Detector	9.4M Pixel FPD
Dimension	750(W) x 830(D) x 1,450(H)mm / 700kg

Key Features

Cycle Time	9 sec. (Standard: Ø180 Reel)
Counting Accuracy	>99.9%
Scan Reel Diameter	Max. Ø400

In-Line X-ray Inspection System for Secondary battery

X-eye 9000 series



- In-Line inspection system for secondary battery total inspection
- Battery plate inspection (Angled-shape, circle-shape, pouch-shape)
- Max. 180ppm inspection

General Product Features

X-ray Tube.	100kV / 200µA
Focal Spot Size	5 µm
Inspection Ability	120ppm , 150ppm, 180ppm
System	Conveyor / Index / Pick&Place type Loading
Dimension	1,800(W) x 1,560(D) x 2,070(H)mm / 5,000kg

Semiconductor Packaging System

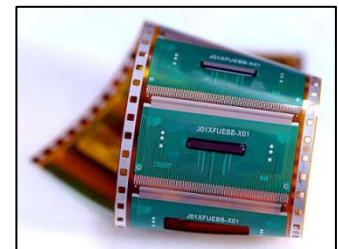
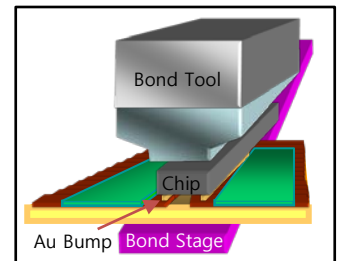
Flip Chip Bonder



- High-speed, high-precise Linear Motor
- Optimized Vision Image UI
- FPC supply method : Reel or Magazine
- Dispensing function

General Product Features

Model	FCB-200	FCB-300
Accuracy	± 2.0μm (3σ)	1.5μm (3σ)
Cycle Time	1.7sec/IC	1.3sec/IC
Temperature	30~550°C	30~550°C
Bonding Force	10~343N	10~343N
Wafer Size	Φ6 inch (Φ150mm)	Φ8 inch (Φ200mm)
	Φ8 inch (Φ200mm)	Φ12 inch (Φ300mm)
Dimension	2,680(W) x 1,440(D) x 1,850(H)	2,894(W) x 1,624(D) x 1,840(H)



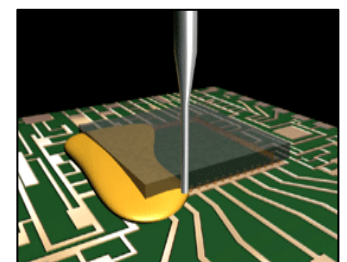
TAB IC Potting System



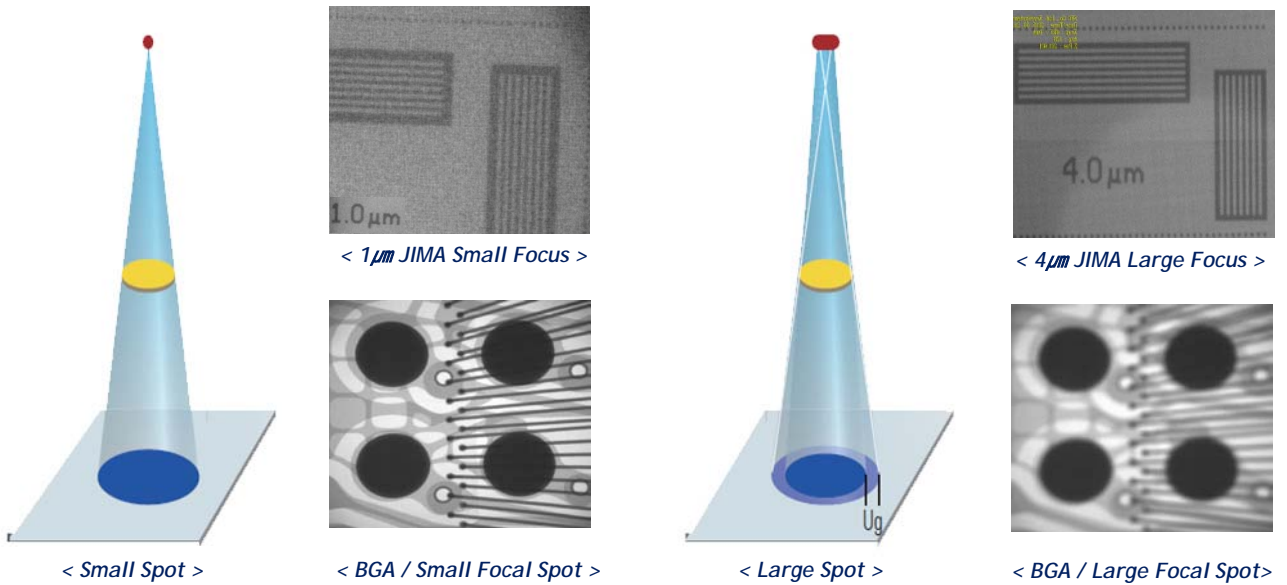
- Various model applicable : 2 ~ 20 PF (per 0.5 PF)
- Precise Tape Indexing (Encoder Feedback)
- Needle Auto Calibration
- Stable hardening condition
(Heater Zone individual control)

General Product Features

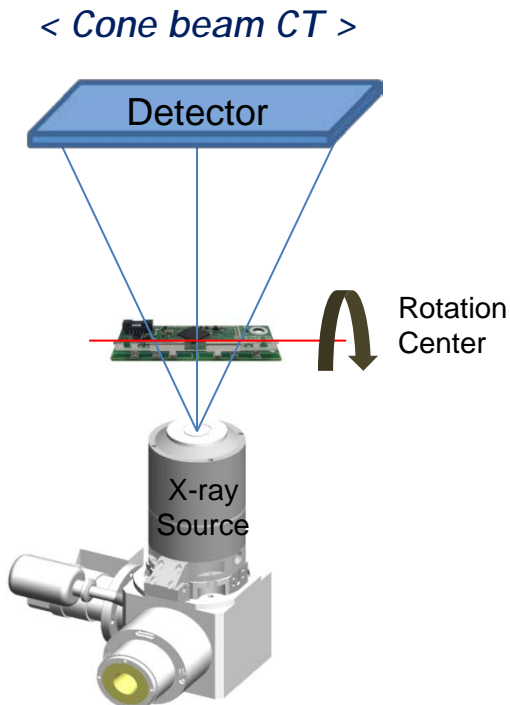
Object Tape	35mm, 48mm, 70mm (Super, Wide)
Tape Thickness	0.025mm – 0.125mm (TCP, COF)
Chip size	1 x 1 to 20 x 20mm
Chip Thickness	0.2 – 1.0mm
Tape Material	Polyimide
REEL Outside Diameter	Max. TAB Reel Ø620 (Spacer Reel Ø530)



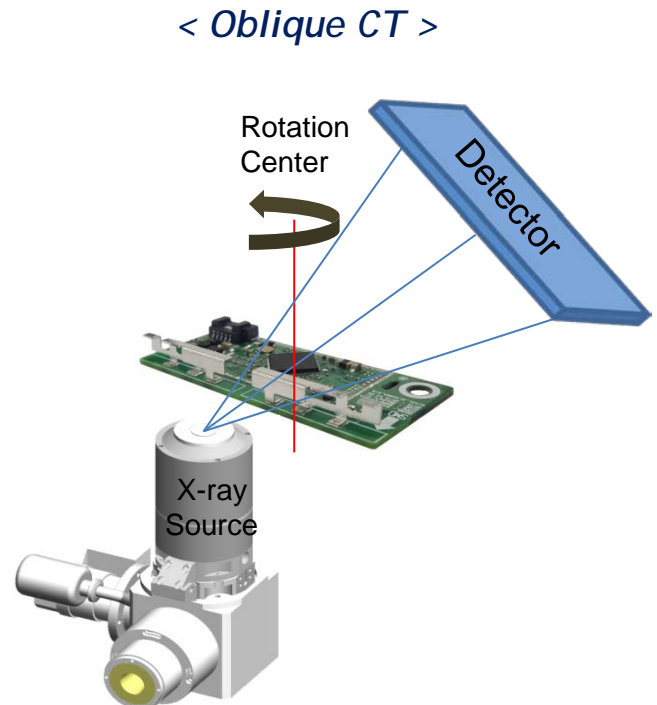
Understanding of Geometric Resolution (Focal Spot)



CT System Introduction



▪ Suitable for Inspection of small sample with high magnification



▪ Suitable for Inspection of big sample with high magnification

SEC CO., Ltd.



Company **SEC CO., Ltd.**
Histories **Established in 1991**
Address **Suwon, Korea**
Products **X-ray inspection systems, Mini-SEM,FCB**

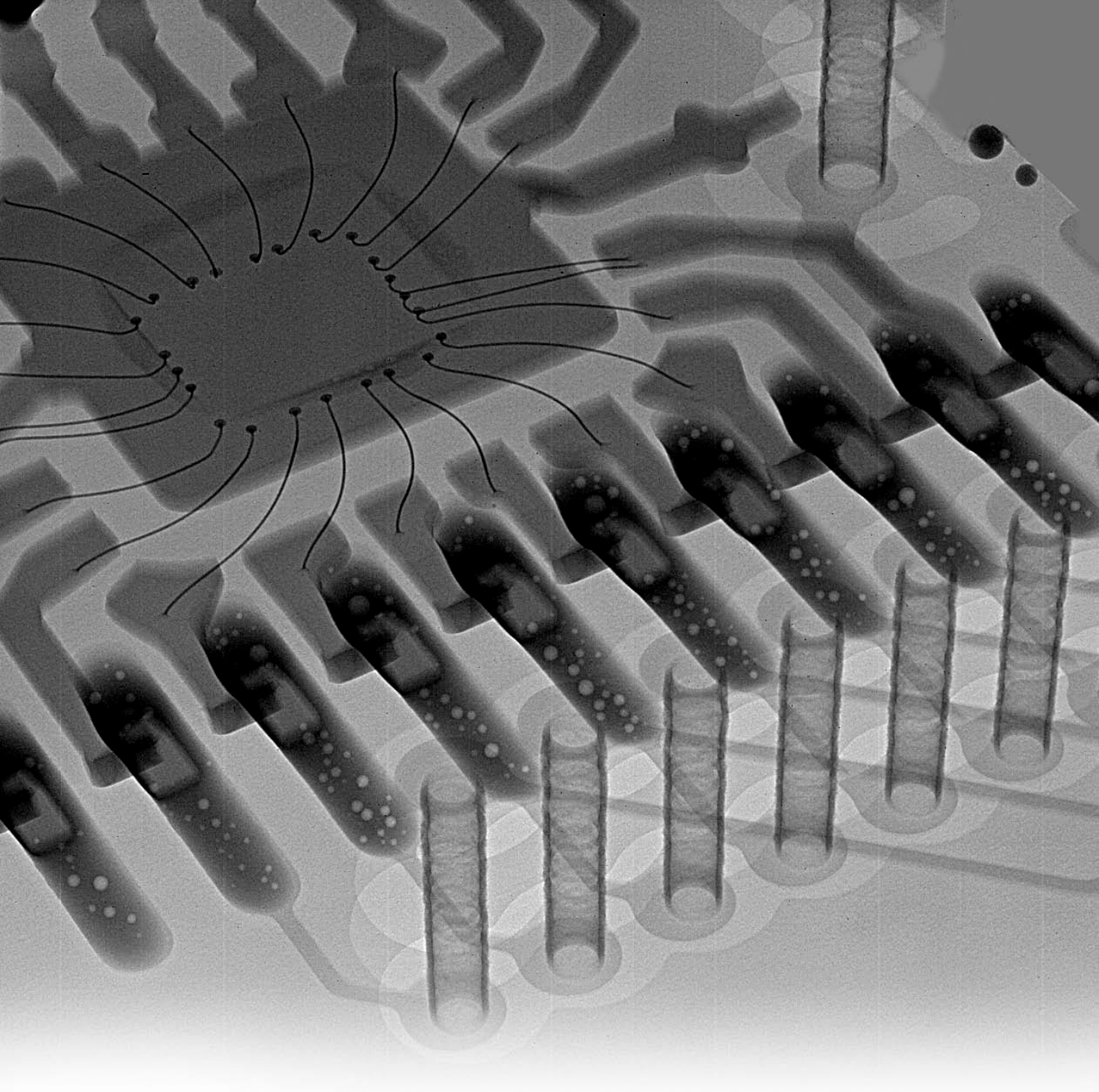


- Manufacture & develop
Sec's own X-ray tubes.
- Nano tube with the highest resolution,
Hybrid tube for In-line
- Developed the world first and best in-line
Auto X-ray inspection (**WAXI, POP**)

Distribution- Branch Office in China (Shenzhen), 24 distributors in 35 countries



- | | | | | | |
|----------|--------------|-------------|-----------|----------|----------|
| * Korea | * Vietnam | * India | * Hungary | * Italy | * Mexico |
| * Japan | * Philippine | * Australia | * France | * Spain | * Brazil |
| * China | * Malaysia | * Russia | * Germany | * Canada | |
| * Taiwan | * Indonesia | * Israel | * U.K | * U.S | |



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South Korea - Headquarters

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www.seceng.co.kr

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Tel : +86 755 27329966 Fax : +82 755 27399696 Email : wenri@seceng.co.kr
www.seceng.co.kr/CHI

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