

sec
e-beam pioneer



X-RAY INSPECTION SYSTEM

X-eye series



X-RAY INSPECTION SYSTEM

X-eye Series



The Best solution for quality improvement

Off-line X-ray inspection system, In-line automated X-ray inspection system

SEC Co., Ltd. spent over 30 years of automation technology for precision parts production facilities, 20 years of design technique of X-ray inspection systems, and 15 years of accumulated know-hows for developing the only X-ray tube in Korea by selling and developing the world's best X-ray Inspection System.

The X-ray Inspection System detects voids that may occur in products of various industries including SMT, semiconductor, automotive application components, battery, Smart devices, and Die-casting, which contributes to improving the reliability and quality of products.

By having more than 20 steam line of products, able to recommend a system suitable for every product. The In-line automated X-ray Inspection System is especially suited for Industry 4.0 - Smart factory, that help our customer productivity and quality improvement which makes SEC possible to become world's best inspection company in the fields of speed and detectability.

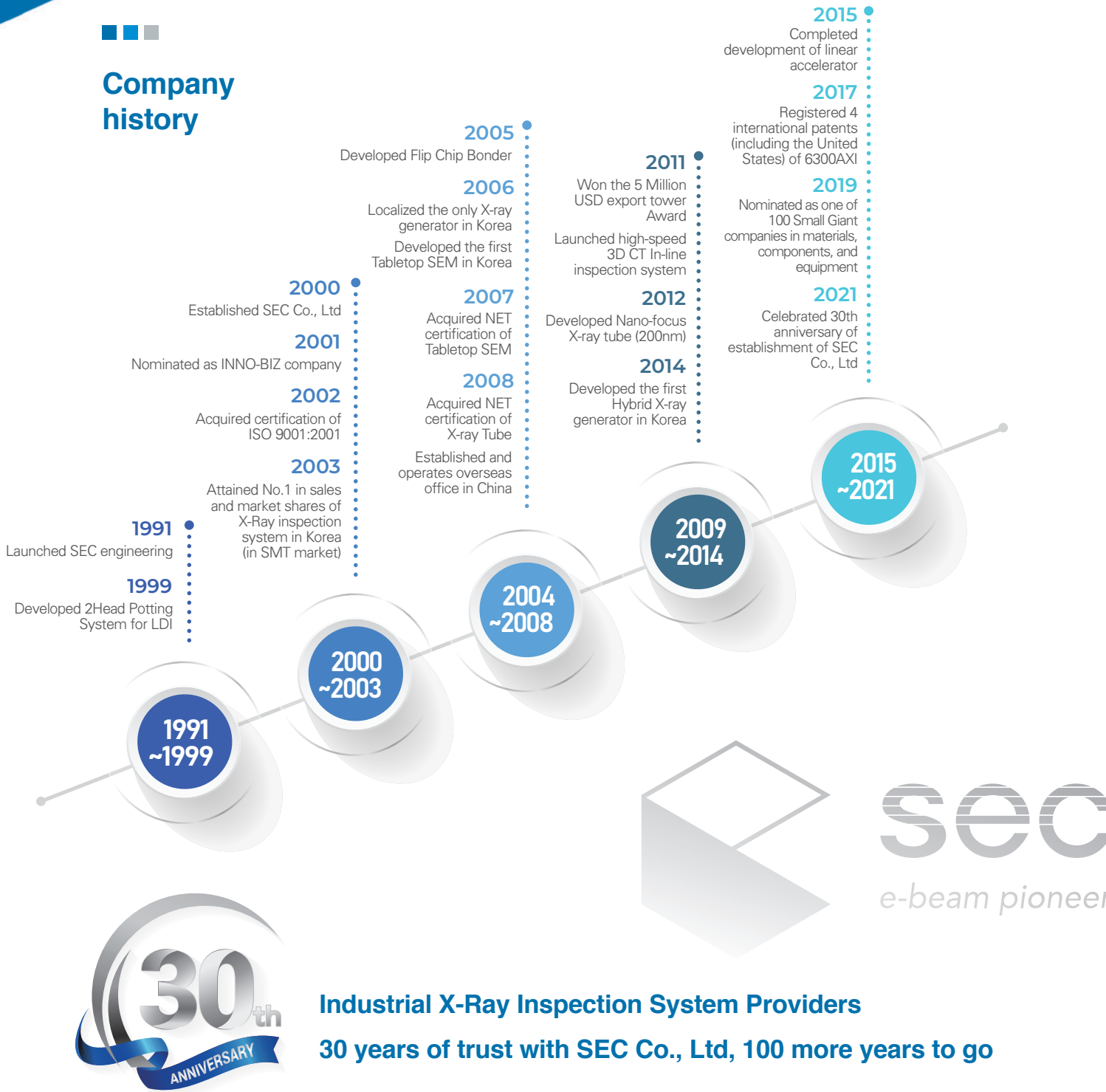


Major patent certificate

- X-ray** • In-line CT Inspection System and inspection method, and 42 other cases
- SEM** • Scanning Electron Microscope (SEM) and treatment and inspection method, and 3 other cases
- PKG** • 6 Head Potting System for semiconductor ship application and potting methods, and 22 other cases



Company history



Industrial X-Ray Inspection System Providers

30 years of trust with SEC Co., Ltd, 100 more years to go

In March 1991, SEC started business in developing and manufacturing factory automation equipment, and successfully localized industrial 2D X-ray inspection system in the beginning of 2000. SEC Co., Ltd recently developed a high-speed 3D AXI, and the market shares of SEC system is consistently expanding in the areas of final inspection process of safety and reliability related components for industries such as semiconductor, automobile, smartphone, and secondary battery.

SEC is responding to new demands by developing key components of X-Ray Inspection System such as X-Ray Tube, LINAC, Tabletop-SEM, and semiconductor package equipment and consistently enhancing their performance.

SEC will strive to become a long-lasting company with more than 100 years through steady development of new products and management innovation to attend to your needs.

Basic concept of X-ray system

Concept of geometric magnification

ODD

Object to Detector Distance

Distance between Product and Detector

FDD (SDD)

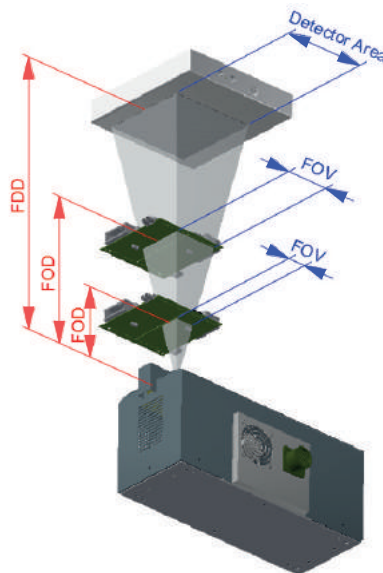
Focal spot (Source) to Detector Distance

Distance between Focal spot and Detector

FOD (SOD)

Focal spot (Source) to Object Distance

Distance between Focal spot and Object



Detector Area

Area of Detector

FOV - Field Of View

Visible area for the X-ray image

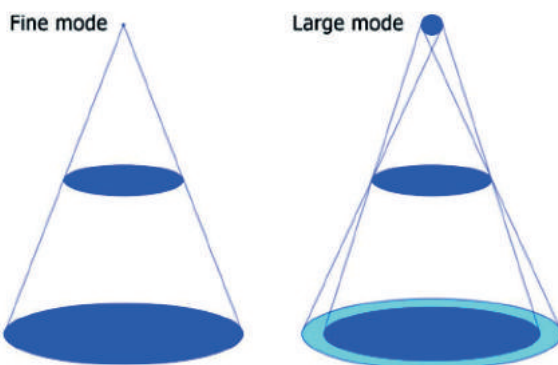
Wider the Detector Area, wider the FOV of the same magnification

Geometric magnification

$$= FDD \div FOD$$

High resolution images could acquire if the products are close enough to Tube. Likewise, if the detector is close to Tube, high resolution images also acquire.

Focal spot size



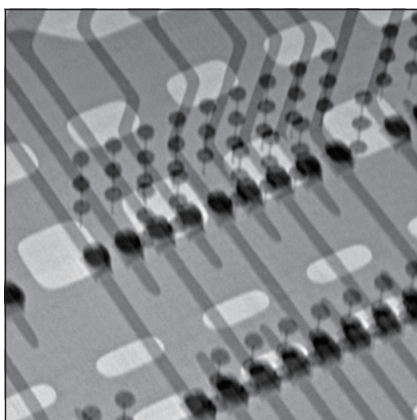
Focal Spot

Place where electrons collide with Target

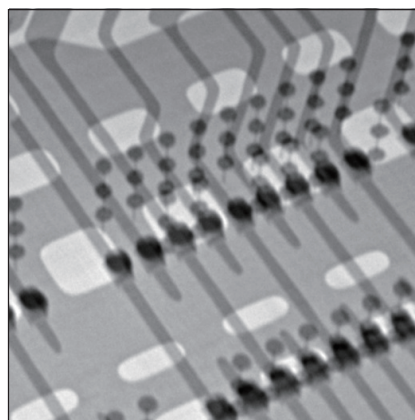
Focal Spot Size

Diameter of Focal Spot

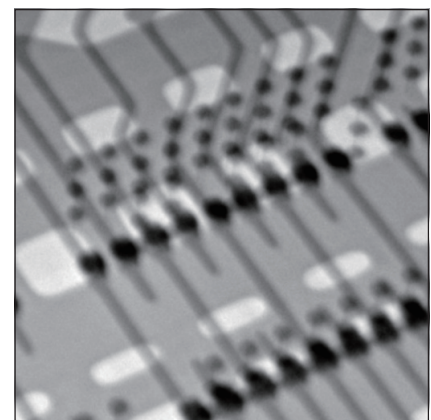
Visibility raised when size of Key Factor that determines resolution is smaller



0.8µm Focal spot

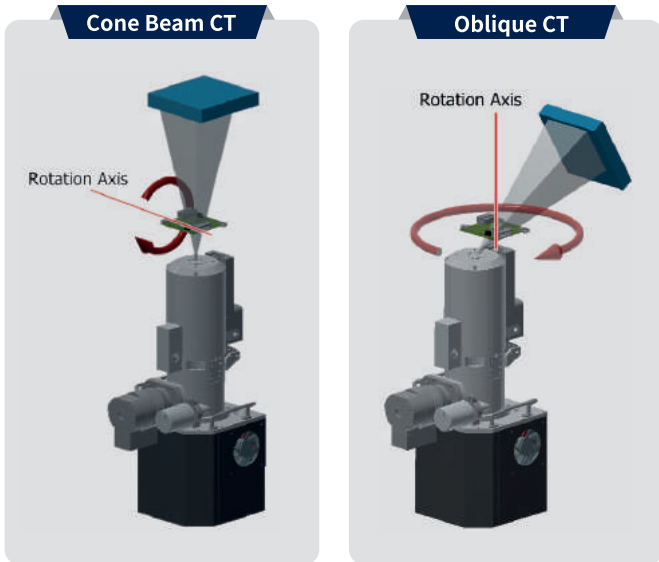


3µm Focal spot



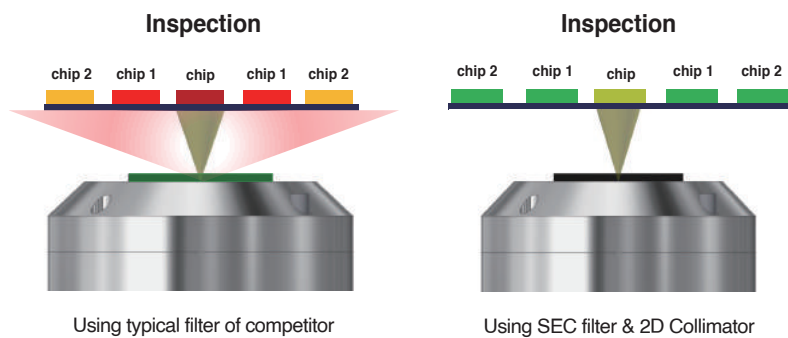
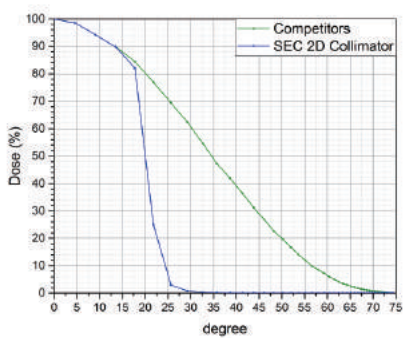
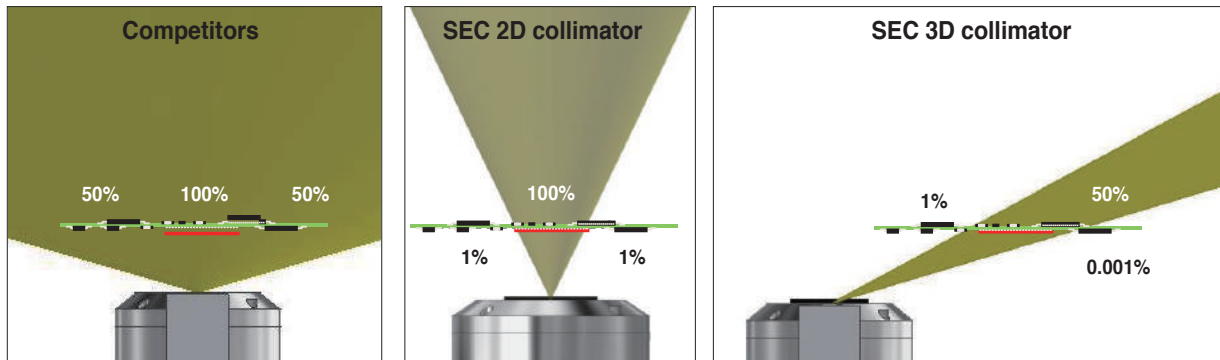
6µm Focal spot

CT scanning method



Type	System	Object
Cone Beam CT	Rotate perpendicular to Beam axis between Tube and Detector	Small components or Die-casting
Oblique CT	Detector rotates parallel to Tube in 40° or more	Besides Die-casting

Damage Free Knowhow



SEC's own X-ray damage free technology – collimation and filtering patent registered. It allows for X-ray inspection of subjects such as semiconductor and memory that are vulnerable to X-rays.

X-eye Series

Off-line X-ray Inspection

Simple and convenient
2D, 2.5D, 3D CT inspection
Mass production available
with AXI S/W system

Off-line X-ray inspection system offers images of superlative quality and user-friendly experience with more than 20 types of products steam lines are ready to provide the best solutions.

X-eye Compact



5000N series

- Inspection system for simple and mass production analysis
- Automatic inspection available with AXI S/W option
- Fast and clear images acquired through both hands supported Z axis construction method
- Maximum of 650 x 550mm defects analysis available

X-eye Die-casting



7000 series

- 3,000 μ A of high power could use for CT scanning, for the Die-casting products
- Precise 3D analysis with Cone-beam CT feature
- Customized system is available, according to size and specification of components

X-eye Simple & Versatile



SF160F/N series

- System optimized for precise analysis and 3D view
- Nondestructive inspection facility for precise analysis of semiconductor and electronic packaging
- AXI S/W system allows automatic inspection for manual distribution and inspection of mass production



SF160ER series

- System optimized for precise analysis and 2.5D view
- Detector rotation function enable user to have convenient view of 2.5D
- Convenient to conduct PCB, LED inspection with Table size of up to 900 x 900mm



SF160RT

- Nondestructive inspection facility for precise analysis of SMT, electronic, and especially semiconductor packaging
- Application of various shifting methods of X and Y tilt enable to have better degree view of 2.5D
- Optimization of Multi-layer PCB inspection
- Additional Oblique/Cone-beam CT available

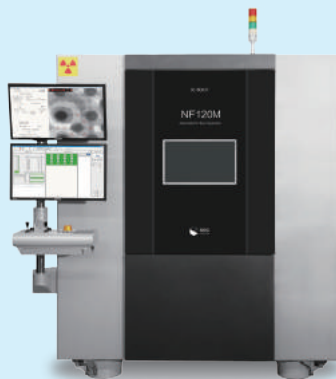
X-eye Die-casting



PCT series

- High power of up to 3,000 μ A available using 225kV Micro-focus open tube
- Nondestructive inspection system suitable for middle and large sized products such as die-casting, automobile engine, and wheel
- 3D CT-specialized facilities capable of precise analysis through controlling high resolution drive shaft with surface plate structure

X-eye Nano Focus



NF120M

- System for manual inspection of semiconductor PKG
- Maximum resolution (0.2 μ m) implementable
- Maximum resolution images acquired with roof mounted structural Tube
- Inspection of all semiconductors including Wafer level packaging



Nano-CT

- 200nm level of superlative focal spot size are available
- Specialized for high-precision analysis system
- Images of various magnification and resolutions acquired with dual Detector and Z axis variables
- Optimized for fields requiring precise analysis such as HBM2 and packing chip that

5000N series

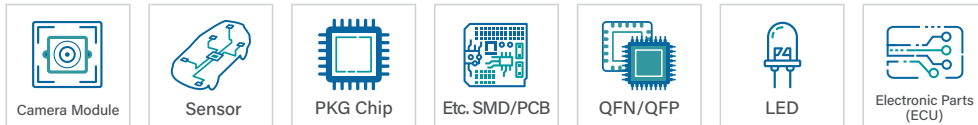
X-eye Compact



Specification

		X-eye 5000N	X-eye 5000NSL
X-ray Tube	Type	Micro-focus Closed Tube	
	Min. Focal spot	5 μ m	
	Max. Voltage	100kV (Option : 130kV)	
	Max. Current	200 μ A	
Detector	Resolution	1.3M Pixel FPD (Option 2.3M Pixel FPD)	
	Frame rate	30FPS	
Stage	Axis	X, Y, Z, T (Option Tilt)	
	Table size (mm)	450 x 380	650 x 550
	Stroke (X-Y-Z, mm)	420 x 340 x 200	610 x 510 x 200
Magnification	Geometric	x 1.5 ~ 35	
	Digital	x 1.5 ~ 680	
System	Dimensions (W-D-H, mm)	1,610 x 1,345 x 1,410	2,010 x 1,670 x 1,410
	Weight (kg)	920kg	1,180kg
Option		AXI program, Detector Tilt	

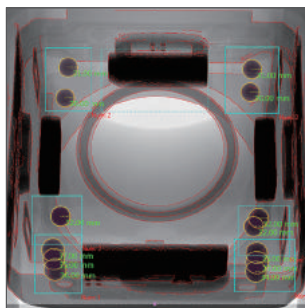
Applications



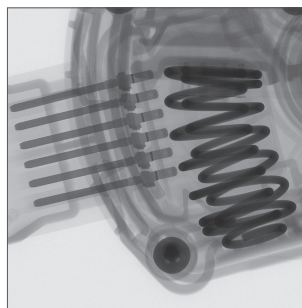
Features

- 100kV and 130kV Micro-focus Closed Tube is SEC's own development technology
- Optimized facility for automatic inspection, using-additional S/W system and teaching feature
- Fast and clear images acquired through both hands supported Z axis construction method
- Maximum of 650 x 550mm defect analysis available
- X-ray's transparent image-based inspection software enable us to analyze the testing result especially for inspection purpose and real-time automatic inspection of interior components

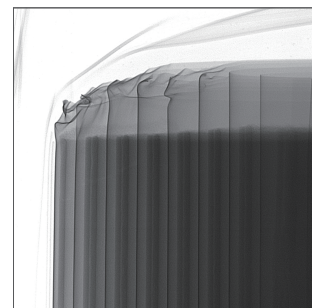
Inspection Images



Camera Module



Electronic Parts



Mobile Battery

SF160F/N series

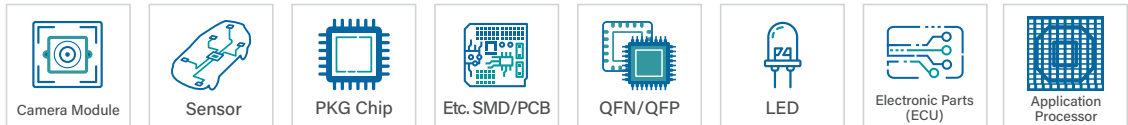
X-eye Simple & Versatile



Specification

		X-eye SF160F	X-eye SF160N
X-ray Tube	Type	Micro-focus Open Tube	Hybrid Open Tube
	Min. Focal spot	0.9 μ m	0.8 μ m
	Max. Voltage	160kV	
	Max. Current	200 μ A	500 μ A
Detector	Resolution	1.6M Pixel FPD	
	Frame rate	30FPS	
Stage	Axis	X, Y, Z, R, T, AFT	
	Table size (mm)	460 x 510	
	Stroke (X-Y-Z, mm)	400 x 460 x 200 (Option 550 x 650 x 200)	
CT	Type	Oblique CT, Cone beam CT	
	Stroke (R-T-AFT)	360°, 70°, 200mm	
	CT Area	Ø200mm (Table center)	
Magnification	Geometric	x2.5 ~ 2,500	
	Digital	x2.5 ~ 50,000	
System	Dimensions (W-D-H, mm)	1,560 x 1,940 x 1,670	
	Weight (kg)	2,000kg	
Option	Stage size up - 540mm x 640mm (2,700kg / 1,540 x 1,640 x 1,670), AXI program, Wafer stage(Ø300)		

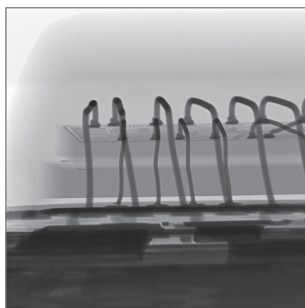
Applications



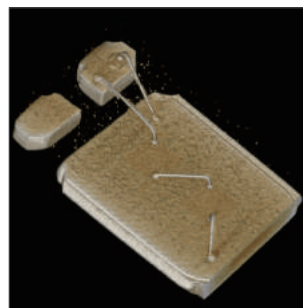
Features

- SEC's own technology of on-board 160kV Micro-focus Open Tube enable us to analyze the high resolution and magnification images
- Nondestructive inspection facility for precise analysis of semiconductor and electronic packaging
- Available for the inspection of mass production correspond with inspection of manual distribution by installing the AXI S/W system
- Maximum of 640 x 540mm defect analysis available
- X-ray's transparent image-based inspection software enable us to analyze the testing result of inspection purpose and real-time automatic inspection of interior components

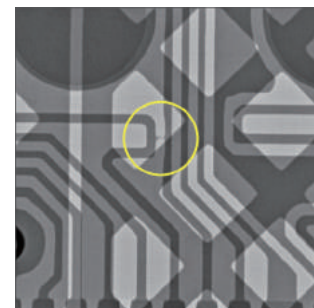
Inspection Images



Bonding wire



LED



PCB

SF160ER series

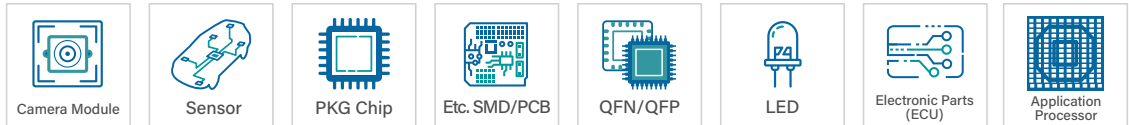
X-eye Simple & Easy



Specification

		X-eye 160ER	X-eye 160ERL
X-ray Tube	Type	Micro-focus Open Tube	
	Min. Focal spot	0.9 μ m	
	Max. Voltage	160kV	
	Max. Current	200 μ A	
Detector	Resolution	1.6M Pixel FPD (6.9M Pixel)	
	Frame rate	30FPS	
Stage	Axis	X, Y, Z, Detector-R (360°), T(70°)	
	Table size (mm)	500 x 550	900 x 900
	Stroke (X-Y-Z, mm)	460 x 510 x 200	910 x 910 x 200
CT	Type	Cone beam CT	
Magnification	Geometric	x2 ~ 2,500	
	Digital	x2 ~ 50,000	
System	Dimensions (W-D-H, mm)	1,460 x 1,480 x 1,400	2,405 x 2,210 x 1,795
	Weight (kg)	1,850kg	3,900kg
Option		Maximum Table size 900x900mm	

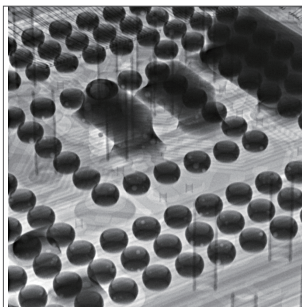
Applications



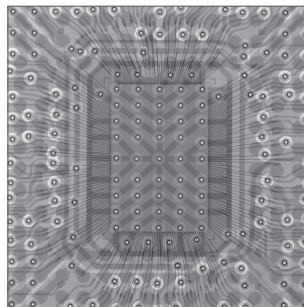
Features

- SEC's own technology of on-board 160kV Micro-focus Open Tube enable us to analyze the high resolution and magnification images
- Easy to implement with large size inspection for PCB and LED, especially about 900 x 900mm
- Increased the inspection area and machine stability, by redesigning the detector R-axis structural layout
- Using up to 70° tilt which make it possible to get 2.5D view images
- X-ray's transparent image-based inspection software enable us to analyze the testing result of inspection purpose and real-time automatic inspection of interior components

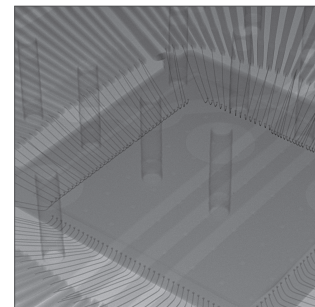
Inspection Images



BGA



Bonding wire



Bonding wire

SF160RT

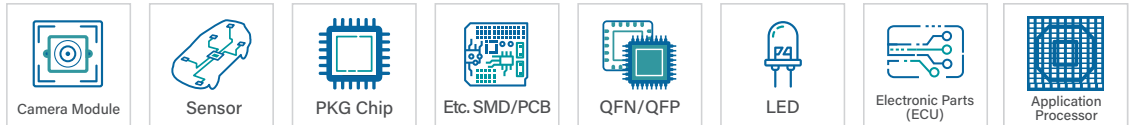
X-eye Versatile



Specification

		X-eye SF160RT
X-ray Tube	Type	Micro-focus Open Tube
	Min. Focal spot	0.9μm
	Max. Voltage	160kV
	Max. Current	200μA
Detector	Resolution	1.7M Pixel FPD (6.9M Pixel)
	Frame rate	30FPS
Stage	Axis	X, Y, Z, Detector-XT (60°), YT(60°)
	Table size (mm)	500 x 550
	Stroke (X-Y-Z, mm)	460 x 510 x 200
CT	Type	Cone beam CT
Magnification	Geometric	x2.5 ~ 2,500
	Digital	x2.5 ~ 50,000
System	Dimensions (W-D-H, mm)	1,460 x 1,460 x 1,650
	Weight (kg)	2,000kg
Option		Detector Option X-ray tube - Hybrid open tube

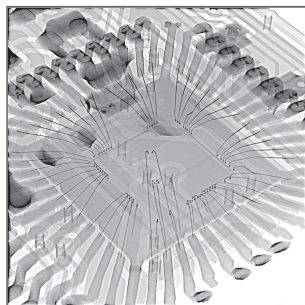
Applications



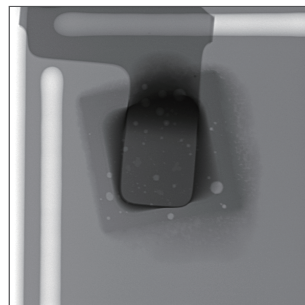
Features

- SEC's own technology of on-board 160kV Micro-focus Open Tube enable us to analyze the high resolution and magnification images
- AXI S/W system allows automatic inspection for manual distribution and inspection of mass production
- Application of various shifting methods of X and Y tilt enable to have better degree view of 2.5D
- The function of 60° tilt detector optimized for the Multi-layer PCB inspection and available to add up the Oblique and Cone-beam CT

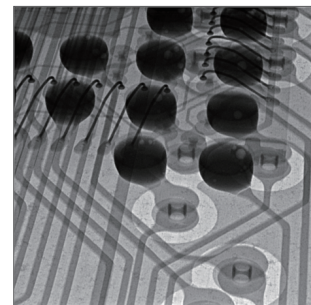
Inspection Images



Bonding wire



Epoxy



Bonding wire

7000 series

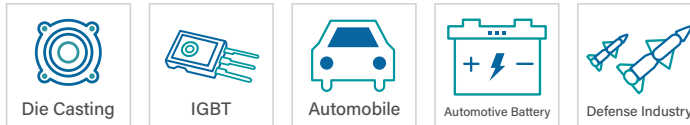
X-eye Die-casting



Specification

		X-eye 7000B	X-eye 7000BS
X-ray Tube	Type	Micro-focus Open Tube	
	Min. Focal spot	6 μ m	
	Max. Voltage	160kV	
	Max. Current	3,000 μ A	1,000 μ A
Detector	Resolution	9.6M Pixel FPD	3.2M Pixel FPD
	Frame rate	30FPS	20FPS
Stage	Axis	X, Y, Z, R	
	Table size (mm)	\varnothing 300 x 500	\varnothing 300 x 400
	Stroke (X-Y-Z, mm)	680 x 480 x 900	500 x 300 x 400
CT	Type	Cone-beam CT	
Magnification	Geometric	x5.7 ~ 8.6	x1.4 ~ 14.3
	Digital	x5.7 ~ 170	x1.4 ~ 280
System	Dimensions (W-D-H, mm)	2,040 x 1,900 x 2,360	1,840 x 1,500 x 1,690
	Weight (kg)	5,300kg	2,500kg
Option		225kV / 3,000 μ A Tube	

Applications



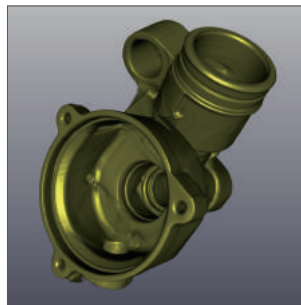
Features

- SEC invented the 160kV Micro-focus Open Tube, and this available to use high-power of 3,000 μ A, for which CT scanning the Die-casting products
- Nondestructive system which is suitable for analyzing the middle and large sized inner pore or crack
- Various dosage of generator and Detector suitable for each product characteristic internal pore or crack
- Cone-beam CT feature which help to analyze the precise 3D images

Inspection Images



Die-casting



Die-casting



Die-casting

PCT series

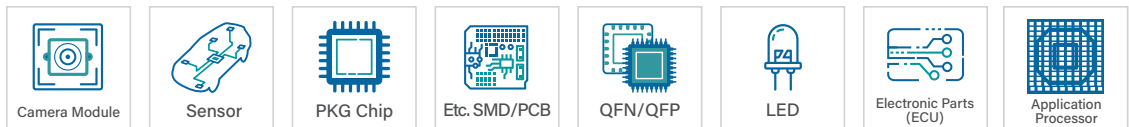
X-eye Die-casting



Specification

		X-eye PCT225	X-eye PCT450
X-ray Tube	Type	Micro-focus Open Tube	Micro-focus Closed Tube
	Min. Focal spot	6 μ m	400 μ m(1,000 μ m)
	Max. Voltage	225kV	450kV
	Max. Current	3,000 μ A	1,500 μ A(3,300 μ A)
Detector	Resolution	4.2M Pixel FPD	
	Frame rate	30FPS	
Stage	Axis	X, Y, Z, R	X, Y, Z, R, DX(600mm)
	Table size (mm)	\varnothing 500 x 900	\varnothing 500 x 900
	Stroke (X-Y-Z, mm)	500 x 300 x 400	750 x 350 x 1,100
CT	Type	Cone-beam CT	
Magnification	Geometric	x3.3 ~ 410	x1.2 ~ 120
	Digital	x3.3 ~ 8,000	x1.2 ~ 2,400
System	Dimensions (W-D-H, mm)	2,680 x 1,560 x 2,325	3,400 x 2,000 x 2,500
	Cabinet (W-D-H, mm)	1,204 x 1,022 x 2,016	600 x 1,250 x 1,020
	Weight (kg)	10,000kg	10,000kg
Option		320kV / 22,500 μ A Tube	

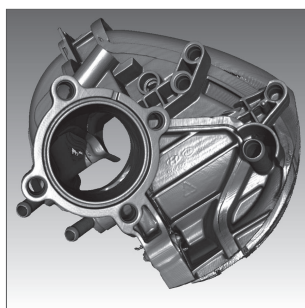
Applications



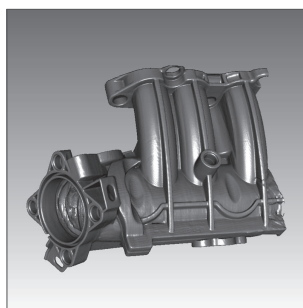
Features

- SEC invented the 225kV Micro-focus Open Tube, and this is available for using the high-power of 3,000 μ A, for which CT scanning the Die-casting products
- Nondestructive analyzing system suitable for middle and large sized products such as die-casting, automobile engine, and wheel
- Facilities suitable for internal pore and crack inspection of automobile parts
- 3D CT-specialized facilities capable of precise analysis through controlling high resolution drive shaft with surface plate structure

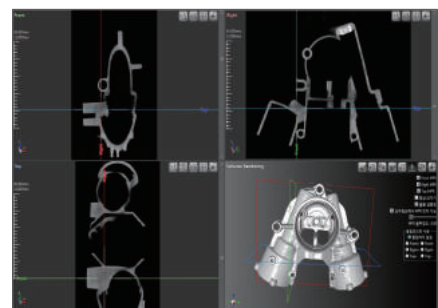
Inspection Images



Die Casting



Die Casting



Die Casting

NF120M

X-eye Nano Focus



Specification

		X-eye NF120M
X-ray Tube	Type	Nano-focus Open Tube
	Min. Focal spot	0.2 μ m
	Max. Voltage	120kV
	Current	200 μ A
Detector	Resolution	3M Pixel FPD
	Frame rate	26FPS
Stage	Axis	X, Y, Z, T, DR
	Table size (mm)	Max. 12inch
	Stroke (X-Y-Z, mm)	450 x 450 x 200
CT	Type	Oblique CT, Cone-beam CT
	Stroke (R-T)	360°, 70°
	CT Area	\varnothing 200mm (Table center)
Magnification	Geometric	x2.5 ~ 2,500
	Digital	x2.5 ~ 50,000
System	Dimensions (W-D-H, mm)	2,200 x 1,500 x 2,150
	Weight (kg)	8,000 kg
Option		Wafer stage, Detector EFEM installation for wafer, AXI Program

Applications



Features

- Nondestructive inspection facility that design for semiconductor PKG Manual inspection
- Maximum resolution (0.2 μ m) implementable
- Maximum resolution images acquired with roof mounted structural Tube
- Highly precise images acquired with surface plate structure
- Objects for inspection
 - All semiconductors including Wafer Level Packaging
 - Bump Solder Ball, Void, Short, Bridge, Big Solder Ball, Missing, Via, etc.

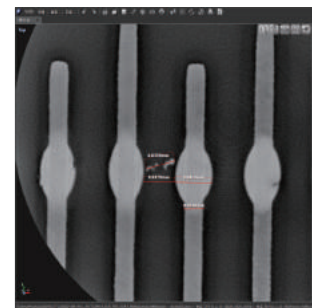
Inspection Images



CU pillar bump



CU pillar bump



PKG

Nano-CT

X-eye Nano Focus



Specification

		X-eye Nano-CT
X-ray Tube	Type	Nano-focus Open Tube
	Min. Focal spot	0.2 μ m
	Max. Voltage	120kV
	Max. Current	200 μ A
Detector	Resolution	3.2M Pixel FPD
	Frame rate	20FPS
Stage	Axis	X, Y, Z, T, DZ, RTX, RTY, RTR, CBX, CBY, CBR
	Table size (mm)	Max. \varnothing 300
	Stroke (X-Y-Z, mm)	470 x 75 x 50
CT	Type	Oblique CT, Cone-beam CT
	Stroke (R-T)	360°, 100°
	CT Area	50 x 50 mm (Table center)
Magnification	Geometric	x 8 ~ 3,000
	Digital	x 8 ~ 60,000
System	Dimensions (W-D-H, mm)	2,180 x 1,780 x 2,300
	Weight (kg)	6,000kg
Option		Wafer stage, Detector

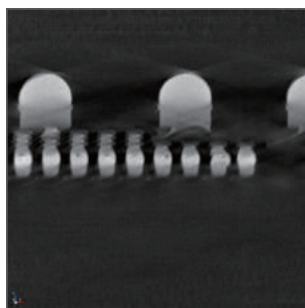
Applications



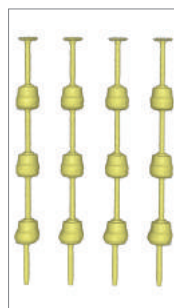
Features

- SEC invented 120kV Nano-focus Open Tube, and this enable to get 200nm focal spot size
- System specialized for high-precision analysis with system location precision of less than 100nm, capable of detecting minimum of 1 μ m ultrastructural defects
- Images of various magnification and resolutions acquired with dual detector and Z axis variables
- Using up to 80° Tilt of both high-precision Oblique CT and Cone-beam CT, multidisciplinary inspection applicable
- Optimized for fields including Wafer, HBM2 and Packing chip that need precise analysis

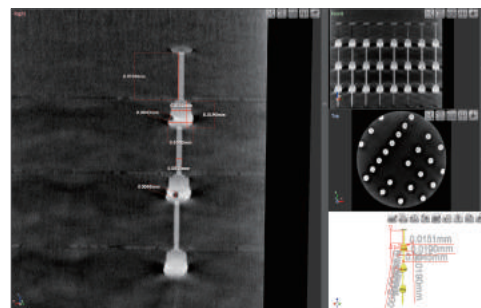
Inspection Images



CU pillar bump



TSV



TSV

X-eye Series In-line AXI system

Industry 4.0, Smart Factory solution
The world best and own technology

SEC In-line AXI system, solution for Industry 4.0
Smart factory, offers high productivity with the
high speed inspection, and is capable of making
accurate inspection on product quality with deep
learning-based AI inspection algorithm.

Compact 2D In-line AXI system



6100AXI

- 3D Automated X-ray inspection system with ultrahigh speed of 3.5 seconds per 1 FOV
- 2D In-line X-ray inspection system with deep learning algorithm
- Automatic 2.5D inspection available
- X-ray inspection system for camera module and PCB inspection

Compact Assembly product 3D CT In-line AXI system



7300AXI

- 3D In-line inspection system for Assembly products
- 3D X-ray inspection system for Component condition of automotive PCB Assembly, barrel pin and solder filling rate
- High-quality image inspection system by In-lining Cone-beam CT structure

4 High 2D In-line AXI system



6200AXI

- 2D Automated X-ray inspection system with ultrahigh speed of 0.2~0.3 second per 1 FOV
- Accurate inspection with deep learning-based AI algorithm
- Wire bonding inspection for Au/Cu wire on QFN/QFP
- Automatic inspection (WAXI™ system) function
- 2D Automated X-ray inspection for ultrastructure defects such as micro-bumps with ultrahigh magnification

4 High 3D In-line AXI system



6300AXI

- The world best quality 3D AXI system
- 3D Automated X-ray inspection system with ultrahigh speed of 3.5 seconds per 1 FOV
- Accurate inspection with deep learning-based AI algorithm
- In-line inspection system that offers high accuracy and reliability with the world's only volumetric inspection algorithm
- Variety of inspection solutions for automotive electronics, SMT, and semiconductor

Best Resolution system



NF120A

- The ultra-high magnification images through roof mounted tube
- Automated X-ray inspection system for nano defects on TSV, Micro-bump, and Cu pillar on Wafer level package
- X-ray damage free inspection system for memory semiconductor with 3D CT auto Collimator and SEC own Filtering technology



NF120AW

- The ultra-high magnification images through roof mounted tube
- Various inspection solutions including Void, Short, Bridge, and Missing of Cu pillar bump, Micro bump, and TSV Package
- X-ray damage free inspection system for memory semiconductor with 3D CT auto Collimator and SEC own Filtering technology

6100AXI Series

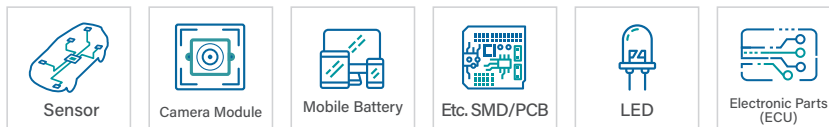
Compact 2D In-line AXI system



Specification

		X-eye 6100AXI series
X-ray Tube	Type	Micro-focus Closed Tube
	Focal spot size	5 μ m
	Max. Voltage	100kV
	Current	200 μ A
Detector	Resolution	1.6M Pixel FPD
	Frame rate	30FPS
Stage	Axis	Tube-X/Y/Z, Detector-X/Y
	Stroke (X-Y-Z, mm)	400 x 400 x 15
2D Inspection	Min. time	0.3 sec/FOV
	Sample size (mm)	50 x 50 ~ 400 x 400
Magnification	Geometric	x 10 ~ 13
	Digital	x 10 ~ 260
System	Dimensions (W-D-H, mm)	1,380 x 1,640 x 2,080
	Weight (kg)	1,500
Option		Magnification x 3 ~ 4

Applications

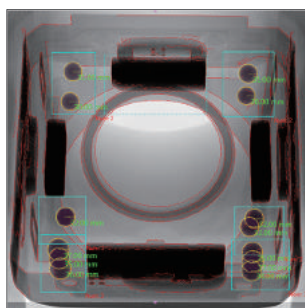


- Automated X-ray inspection system with SEC own-developed 100kV Micro-focus Closed Tube
- Various 2D In-line X-ray inspection system for application using Deep-Learning inspection technology
- High speed 2D In-line X-ray inspection system with speed of 0.3 second per 1 FOV

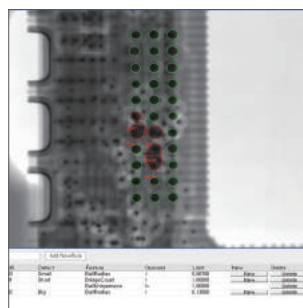
Features

- X-ray inspection system for SMT defects including BGA Void, Big/Small ball, Short, Missing, and component length condition
- X-ray inspection system optimized for camera module and cross section PCB inspection
- Inspection system with various Easy-to-use features from periodic updates on user-friendly functions

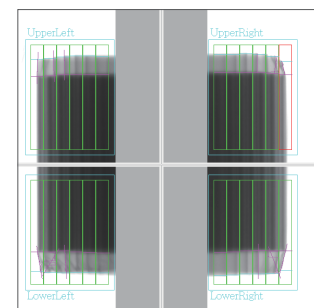
Inspection Images



Camera Module



BGA



Mobile battery

6200AXI Series

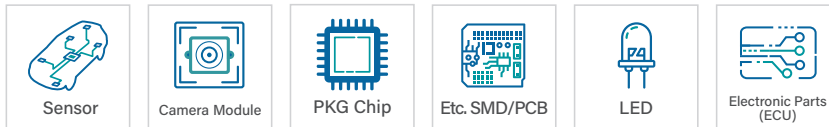
4 High 2D In-line AXI system



Specification

		X-eye 6200AXI series
X-ray Tube	Type	Hybrid Open Tube
	Focal spot size	0.8 μ m
	Max. Voltage	160kV
	Current	500 μ A
Detector	Resolution	9.6M Pixel FPD
	Frame rate	30FPS
Stage	Axis	X, Y, Tube-Z
	Stroke X, Y, Z	350 x 457 x 63.5
2D Inspection	Min. time	0.2 ~ 0.3sec/FOV
	Sample size (mm)	Max. 322.6 x 135.9
Magnification	Geometric	x 8 ~ 62
	Digital	x 8 ~ 1,240
System	Dimensions (W-D-H, mm)	1,670 x 2,000 x 2,160
	Weight (kg)	3,500

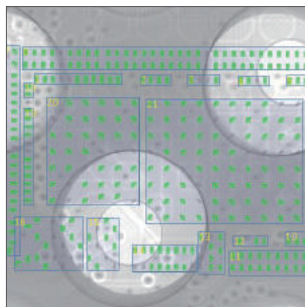
Applications



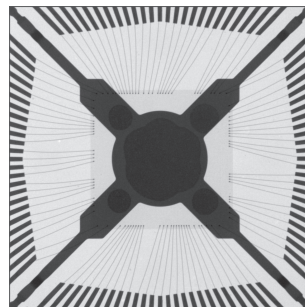
Features

- 2D Automated X-ray inspection system with SEC own-developed and produced 0.8 μ m focal spot Tube and large area detector for detecting minimum of 20 μ m of microstructure defect by high resolution images
- High speed 2D X-ray inspection system with speed of 0.2~0.3 second per 1 FOV for semiconductor and SMT
- High accuracy and reliability X-ray inspection system with precise inspection by deep learning inspection algorithm
- The world class In-line Automated X-ray inspection system with specialized Wire bonding inspection (WAXI™) for various defects of wire bonding PKG

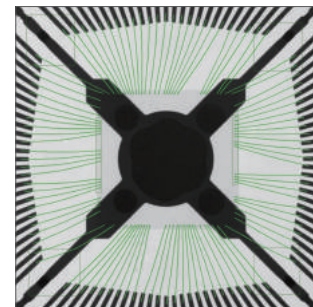
Inspection Images



Micro-bump



Bonding wire



Bonding wire

6300AXI

4 High 3D In-line AXI system



Specification

		X-eye 6300NTI
X-ray Tube	Type	Hybrid Open Tube
	Min. Focal spot	0.8 μ m
	Max. Voltage	160kV
	Max. Current	500 μ A
Detector	Resolution	9.6M Pixel FPD
	Frame rate	30FPS
Stage	Axis	X, Y, R, T, Tube-Z
	Stroke (X-Y-Z, mm)	460 x 510 x 200
CT	Type	Oblique CT
	Min. CT Scan time	3.5 sec / FOV
Magnification	Geometric	x4 ~ 57
	Digital	x4 ~ 1,000
System	Dimensions (W-D-H, mm)	1,480 x 2,270 x 2,060
	Weight (kg)	4,200
Option		Cone-beam CT, 2D/2.5D Inspection

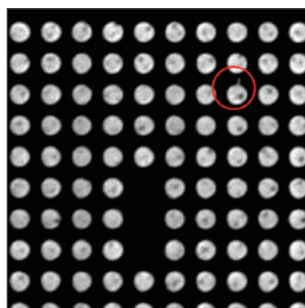
Applications



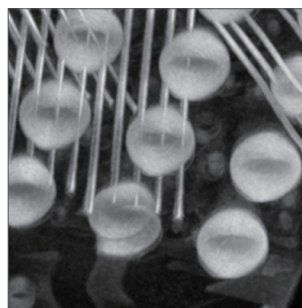
Features

- 3D Automated X-ray inspection system with SEC own-developed and produced Hybrid Open tube, 0.8 μ m focal spot size, for detecting minimum of 50 μ m of microstructure defect by high resolution images
- High speed 3D In-line inspection system with speed of 3.5 seconds per 1 FOV
- High accuracy and reliability X-ray inspection system with World class volumetric inspection
- High resolution Inspection system by Oblique CT method that minimized image distortion through up to 70° Detector Tilt
- X-ray inspection system for Automotive electronics, SMT, and Semiconductor defects including Non-wet, HIP, Short, Missing and Void

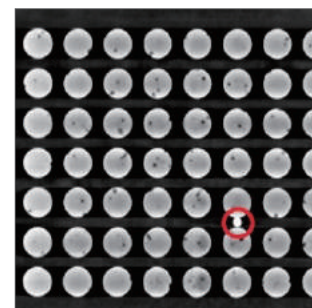
Inspection Images



BGA - bridge



BGA - HIP



BGA - bridge

7300AXI

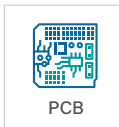
Assembly Product 3D CT In-line AXI system



Specification

		X-eye 7300AXI
X-ray Tube	Type	Hybrid Open Tube
	Focal spot size	0.8 μ m
	Max. Voltage	160kV
	Current	500 μ A
Detector	Resolution	9.6M Pixel FPD
	Frame rate	30FPS
Stage	Axis	Tube-Y, Stage-Z/R
CT Inspection	Type	Cone-beam CT
	Sample size (mm)	150mm \varnothing x 150mmH
	Min. CT Scan time	14.5sec/FOV
Magnification	Geometric	x1.9 ~ 3
	Digital	x1.9 ~ 60
System	Dimensions (W-D-H, mm)	2,500 x 2,118 x 2,088
	Weight (kg)	2,900

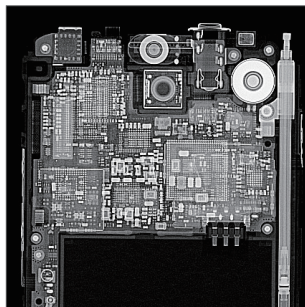
Applications



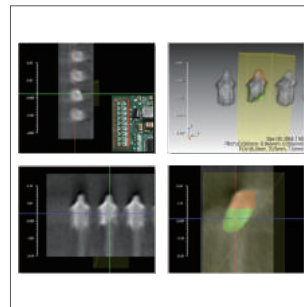
Features

- High efficiency X-ray inspection system for low maintenance cost by SEC own-developed Hybrid Open Tube
- 3D In-line X-ray inspection system for Assembly products as mobile and automotive electronics (e.g., ECU, etc.)
- High quality resolution X-ray inspection system by In-lining Cone-beam CT structure
- 3D X-ray inspection system for Component condition of automotive PCB Assembly, barrel pin and solder filling rate
- X-ray inspection system Void inspection of Middle/Small sized Die casting

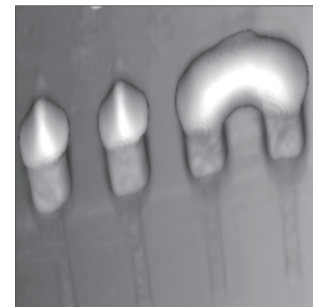
Inspection Images



Assay' - connect



Assay' - connect



Assay' - connect

NF120A

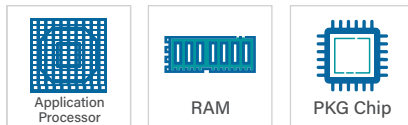
BEST Resolution Substrate system



Specification

		X-eye NF120A
X-ray Tube	Type	Nano-focus Open Tube
	Min. Focal spot	0.2 μ m
	Max. Voltage	120kV
	Current	200 μ A
Detector	Resolution	12M Pixel FPD
	Frame rate	26FPS
Stage	Axis	X, Y, Z, T, DR
	Table size (mm)	200 x 50 ~ 260 x 100
	Stroke (X-Y-Z, mm)	450 x 216 x 200
CT	Type	Oblique CT, Cone-beam CT
	Stroke (R-T)	360°, 70°
	CT Area (mm)	200 x 100 (Table center)
Magnification	Geometric	x2.5 ~ 2,500
	Digital	x2.5 ~ 5,000
System	Dimensions (W-D-H, mm)	4,060 x 2,326 x 2,402
	Weight (kg)	9,000 kg
Option		Wafer stage, Detector

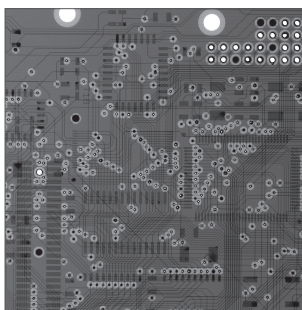
Applications



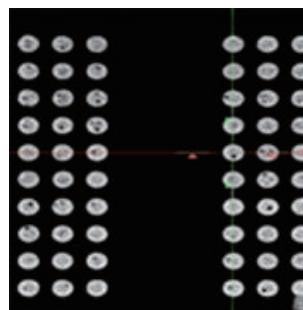
Features

- The best resolution X-ray inspection system with SEC own-developed and produced Nano-focus open tube of 200nm focal spot size
- X-ray inspection system for detecting ultrastructural defects of μ m level and various defects with both automatic 2D and 3D inspection
- Automated X-ray inspection system for inspecting ultrastructural defects of Micro-bump and Cu pillar on Substrate or Packaging
- X-ray damage free inspection system for memory semiconductor with 3D CT auto Collimator and SEC own Filtering technology

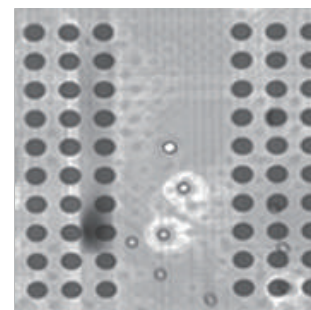
Inspection Images



PCB



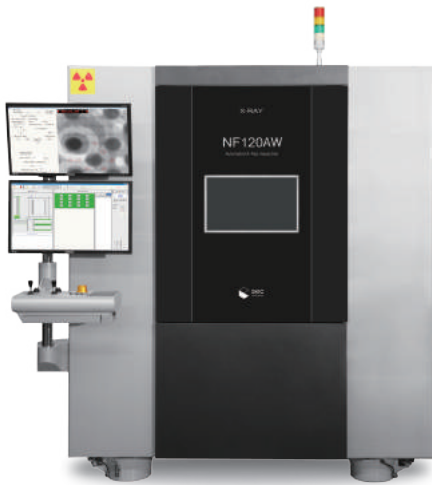
Micro bump



Micro bump

NF120AW

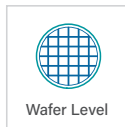
BEST Resolution Wafer AXI system



Specification

		X-eye NF120AW
X-ray Tube	Type	Nano-focus Open Tube
	Min. Focal spot	0.2 μ m
	Max. Voltage	120kV
	Current	200 μ A
Detector	Resolution	3.2M Pixel FPD
	Frame rate	26FPS
Stage	Axis	X, Y, Z, T, DR
	Table size (mm)	Max. \varnothing 300 (12inch)
	Stroke (X-Y-Z, mm)	390 x 460 x 50
CT	Type	Oblique CT, Cone-beam CT
	Stroke (R-T)	360°, 70°
	CT Area	\varnothing 260mm (Table center)
Magnification	Geometric	x2.5 ~ 2,500
	Digital	x2.5 ~ 50,000
System	Dimensions(W-D-H, mm)	2,380 x 1,450 x 2,120
	Weight (kg)	6,350
Option		Wafer stage, Detector EFEM installation for Wafer, AXI Program

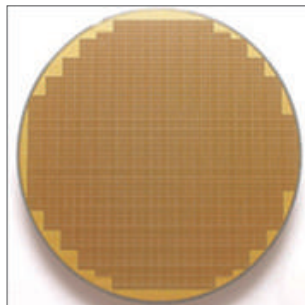
Applications



Features

- The best resolution X-ray inspection system with SEC own-developed and produced Nano-focus open tube of 200nm focal spot size
- X-ray inspection system for detecting ultrastructural defects of μ m level and various defects with both automatic 2D and 3D inspection
- Automated X-ray inspection system for ultra-nano defects on TSV, Micro-bump, and Cu pillar on Wafer level package
- Inspection system for various inspections including Void, Short, Bridge, Big/Small ball, Missing, and Via distance of cu pillar bump, Micro bump, and TSV Package

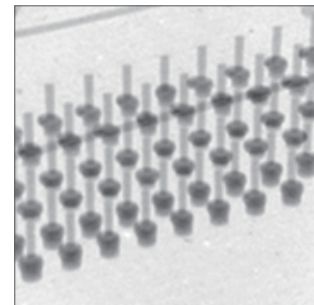
Inspection Images



Wafer Level



TSV



TSV

Memo

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Memo

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Memo

A series of horizontal dashed lines for writing a memo.

X-RAY INSPECTION SYSTEM

X-EYE SERIES

e-beam pioneer

**Korea's No.1 company specialized
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