

Inline Non-Destructive Inspection System BF-CTi

The First Real Inline 3D CT X-Ray Inspection System

BF-CTi is the first inline 3D CT X-ray inspection system in the world, using the latest CT technology developed by Fraunhofer Institute Integrated Circuits (IIS) in Germany. This machine performs complete 3D inspection within 30 seconds for objects such as light metal castings or molded products (e.g. plastics, ceramics,...). This extremely fast 3D inspection allows a Process Integrated Defect Analysis (PIDA) X-ray CT technology, which formerly was only suitable for off-line analysis, to be fully integrated into the production process.

New XEye X-ray Detector

BF-CTi has a new type X-ray detector, called XEye, designed by Fraunhofer institute. XEye has a lot of features including, wide field of view, high resolution, high dynamic range, 16 bit images, external triggering, low noise, low image lag, and ultra long life. Its high image capturing rate of up to 16 fps allows "on the fly CT". In addition, it minimizes maintenance cost. Making it the best solution for inline CT inspection.



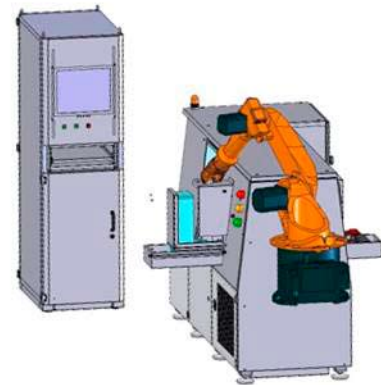
High Speed, Continuous CT Inspection

BF-CTi has a high power and maintenance-free sealed X-ray tube with water cooling system for continuous operation with low maintenance. The best contrast is realized by the wide range of filters to comply with different types of object materials. The combination of a high precision rotation unit and the XEye detector with dynamics of 5000:1 @ 16fps, results in consistently stable and high speed image capturing.



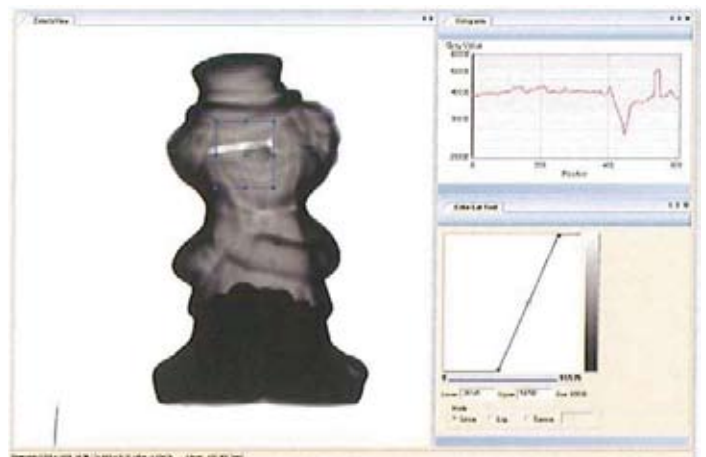
Highly Versatile Production Integration

BF-CTi is suitable for both, inline automatic and manual operation. For the shortest cycle time two rotation units mounted on a high precision linear stage allow parallel measurement and part change over. The linear stage in combination with a labyrinth type radiation shield, as well as various part fixtures allow fast part changeover without entering the x-ray chamber. Optional modules are available to adapt the BF-CTi for robot handling and/or conveyor systems. The machine is controlled by a PLC that can be easily integrated to an existing production line control system.



Process Integrated Defect Analysis - PIDA -

The traditional CT analysis consists of image capturing, 3D reconstruction, measurement of dimensions, void detection, and inspection. This process takes a long time. However, the completely inspection strategy realized with BF CTi merges 3D reconstruction and detection of defects and control of object shape. The detection goes as fast as high speed image capturing and parallel reconstruction. Integrated process control and quality assurance is achieved using the immediately available inspection data. The basic research and the development of this technology were carried out by the Fraunhofer Institute Integrated Circuits IIS.



■ Front View



■ Rear View



System Specifications

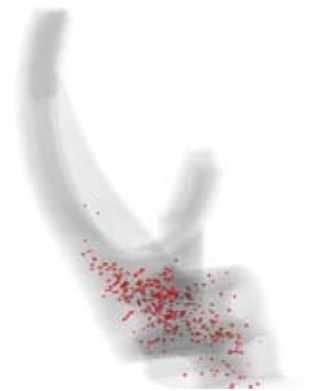
Model	BF-CTi
X-Ray Source Output	225kV, 800/1800W
Camera	XEye
Focal Spot Size	0.4mm/1mm
Detector Area	200mm x 200mm
Max. Sample Size	110mm x 110mm x 110mm
Max. Sample Weight	2kg

System Requirements

Electrical Power Requirements	Three phase with N phase ~400V, 50Hz
Power Consumption	25KVA
Air Requirements	0.6MPa, 5L/min (ANR)
Usage Environment	15°C (59°F) to 35°C (95°F) / 15 to 80% RH (Non-condensing)
Dimensions W x D x H	X-ray Cabinet : 2,390mm x 1,690mm x 1,475mm Control Rack : 1,000mm x 580mm x 1,955mm
Weight	Approx. 2,000kg



Aluminium Mold
(Reconstructed 3D model by CT computing)



Void inside of the Aluminium Mold
(Red Spots)

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