



## PRESS RELEASE

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#### **New computerized tomography option from Dage**

*July 10, 2006, Fremont, California* – Dage Precision Industries announces that it has successfully developed a computerized tomography (CT) option for its XiDAT XD7600NT digital x-ray inspection system. This new CT option is available for the award winning XD7600NT x-ray inspection system and further refines its outstanding performance with volumetric reconstruction of solder joints.

Computerized tomography is an imaging method employing tomography whereby digital geometric processing is used to generate a three-dimensional (3D) image model of an object from a large series of individual two-dimensional (2D) x-ray images, or slices, taken about a single axis of rotation.

This new CT capability is available as an option with new systems and is ideally suited for analytical analysis of interconnections for critical applications such as stacked die, MEMS, package-in-package and package-on-package. When equipped with this new CT option, the XD7600NT has the ability to very quickly and easily convert between 2D and 3D modes for different inspection applications, is capable of ultra fast image reconstruction, and of reconstructing a high number image slices up to 1,440.

With increasing packaging densities, the use of 2D inspection systems is limited requiring 3D inspection for analysis of solder interconnections for many applications such as stacked die. Conventional 3D systems are expensive, have low resolution and slow processing times, and generally do not deliver the analysis performance required for critical, high-density applications.

Dage's approach to overcoming this problem was to develop a fast, reasonably priced solution that offers suitable resolution in a common platform compatible with its current lineup of digital x-ray inspection systems. The end result is the XD7600NT with CT option that combines digital geometric processing software with the highest resolution x-ray tube on the market – the Dage NT250.

When operating in the 3D mode, the sample to be inspected is rotated in the x-ray beam and multiple 2D digital images are captured. These 2D images are fed in real-time to a dedicated reconstruction server where a 3D model is instantly available for viewing.

The reconstruction server is capable of generating 3D volumes of 256<sup>3</sup>, 512<sup>3</sup> and 1,024<sup>3</sup> using a Feldkamp cone beam reconstruction algorithm with either full or sub-volume reconstruction, with all calculations being carried out by 16 dedicated processing units running in parallel.

The reconstructed 3D image model can be viewed on-line or off-line with dedicated image hardware allowing real-time manipulation of 3D models. Image display features include:

- Image Manipulation – rotate, pan and zoom
- Clip Image – to eliminate unwanted detail
- Volume Rendering – for creation of solid surfaces and maximum intensity, and to vary the opacity and color of volumes
- Slices – multiple cross section at any orientation and the ability to vary the opacity and color of individual slices
- Illumination Models – single light source or two light sources with shadow computation for optimal 3D perception
- Image Save – saving 2D images in JPG or TIF formats

The XD7600NT equipped with the CT option is capable of full 3D inspection of samples, full 2D imaging of any point across the entire 458 x 407 mm inspection area, and rapid and easy conversion between 2D and 3D modes.

With US headquarters located in Fremont, California, Dage Precision Industries, Inc. manufactures and supports a complete range of award winning digital x-ray inspection systems and bond test equipment for the printed circuit board assembly and semiconductor industries. For more information, visit [www.dageinc.com](http://www.dageinc.com).

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