



Presented at NDE2002, to predict. assure. improve. www.nde2002.org
National Seminar of ISNT, the Indian Society for Non Destructive Testing
Hotel Taj Connemara and Raja Muthiah Hall, Chennai, 05. – 07. 12. 2002

Computed Tomography Visualizations Using Multiple Discrete Detectors

P. K. Khatri, G. L. Baheti, Nisheet Saxena, K. C. Songara, L. R. Meghwal, V. L. Meena

Material Evaluation & Computer Application Group, Defence Laboratory, Jodhpur - 342011, India
Email: nisheets@yahoo.com

Abstract

Computed Tomography (CT) has proved to be the most powerful tool for internal structure visualizations in Non destructive Testing and evaluation. Defence Laboratory, Jodhpur (DLJ) has earlier developed a first generation CT system based on Cs-137 radio-isotope source and has also adapted fluoroscopy system for fast tomographic visualizations. The present work describes a unique multi-detector CT system newly developed at DLJ, which is based on Ir-192 radio-isotope source and uses four number of discrete detectors, thereby reducing the data acquisition times by one fourth as compared to the single detector first generation CT systems.

CT system developed comprises of a computer controlled mechanical manipulator which can handle objects of weight upto 60 kg and maximum diameter 500 mm, four NaI(Tl) radiation detectors with associated electronics for simultaneous data acquisitions and CT reconstruction software implemented for the unique geometry. Paper highlights the CT system and results obtained for different objects. The new CT system offers tremendous potential for Non destructive testing and evaluation as the solution is cost-effective, reduces the scanning time and offers increased flexibility to suit the scanning requirements of industrial objects with varying sizes. The simplicity in operation and control is also an added advantage.

Keywords: Computed Tomography, Discrete detector tomography