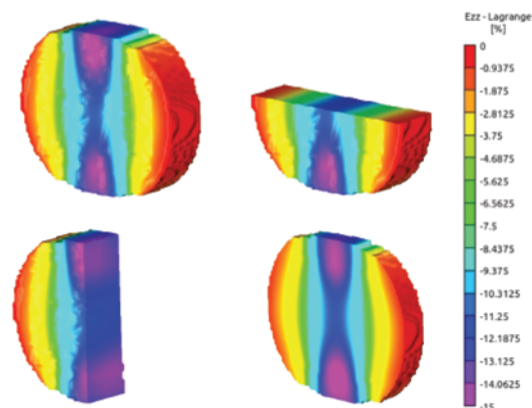


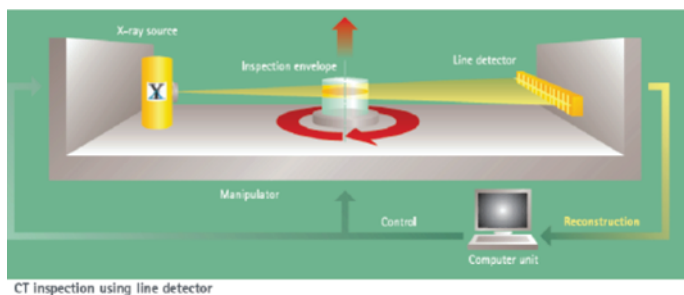
# VIC-Volume Digital Image Correlation Software

by Correlated Solutions

The new Vic-Volume software by Correlated Solutions is an exciting addition to the VIC image correlation product line. Vic-Volume utilizes volumetric images from X-Rays or CT-Scanners to measure internal deformation of a specimen under an applied load. Vic-Volume analyzes the acquired images to create three-dimensional volumetric displacement and strain data of the specimen's internal behavior. The resulting data is a full-field contour plot of the deformation data that can be viewed, animated, and extracted for FEA validation. The image to the right displays the internal strain ( $E_{zz}$ ) of a rubber puck undergoing compression.



Various slices of the volumetric strain data of a rubber puck obtained from Vic-Volume



Typical setup of the Vic-Volume system

## Background

Digital Image Correlation (DIC) has found widespread popularity among scientists, researchers and engineers across the globe due to its accuracy, robustness, versatility, flexibility and overall ease of use. DIC is commonly used to measure 2D and 3D surface deformation and strain utilizing white light machine vision digital cameras. Correlated Solutions has offered turn-key 2D and 3D DIC

systems since 1998, and continues to develop and add new advanced DIC products to our growing product line. More recently, Correlated Solutions has developed new software that utilizes images from X-Rays or CT scanners to measure volumetric deformation of an object under an applied load. The diagram above displays a typical setup of how the images are acquired during a test. The scanner acquires images at specific depth coordinates, and then Vic-Volume analyzes the image slices to construct a 3D volume made up of voxels. The individual voxels are the building blocks for the sub-volume, which contain the volumetric image correlation data.

## Vic-Volume Software Features

- Convenient AOI selection method through 'Tweening'
- Semi-automatic initial guess computation
- Optimized for accuracy using non-linear filter optimization to reduce bias and interpolation artifacts
- Highly optimized code for fast analysis time
- Advanced memory management permits analysis of huge volumetric data sets
- Volumetric 3D displacements & strains

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