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Introducing!

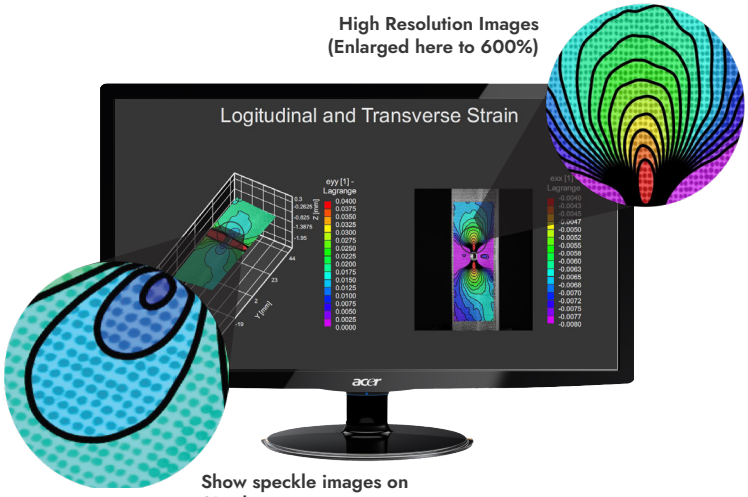
VIC-3D 9

with *iris*

The VIC-3D system from Correlated Solutions is the most powerful turn-key system for non-contact measurement of full-field surface shape, deformation, strain, vibration, and much more. With a range of new features including direct data comparison of FE mesh data and a new graphics engine called *iris*, which can produce extremely high-resolution still and moving images, the VIC-3D system is poised to change the way engineers around the world validate models and share their results.

The new *iris* graphics engine brings a host of new functionality all from within the already versatile VIC-3D software. Some of the exciting new features include:

- Import finite element data for visualization and comparison to measurement data into new graphics framework
- Display synchronized analog data values alongside extractions and/or contour plots
- Create life-like animations using integrated adaptive motion blurring for fast-moving objects
- Animate object position, scale, opacity, rotation, and more with an all new user-friendly interface
- View speckle images on 3D plots
- View high-resolution isolines on 2D and 3D plots with scalable fonts
- Create high-resolution, publication-ready plots in PDF and ultra-high-definition video formats (from 720p to 4K)
- Create high-quality videos using multi-threaded rendering engine
- Edit labels with Unicode support



High Resolution Images (Enlarged here to 600%)

Show speckle images on 3D plots

VIC-3D is still the fastest, most accurate digital image correlation system on the market. Additional key features include:

- Python scripting for customized and repeatable analysis, including batch processing
- Hybrid calibration options for improving calibration via the use of speckle images
- Customizable calibration options for modeling radial, prismatic, and tangential distortions

Contact our Sales Team for more details on the all new VIC-3D software and other exciting new developments from Correlated Solutions.

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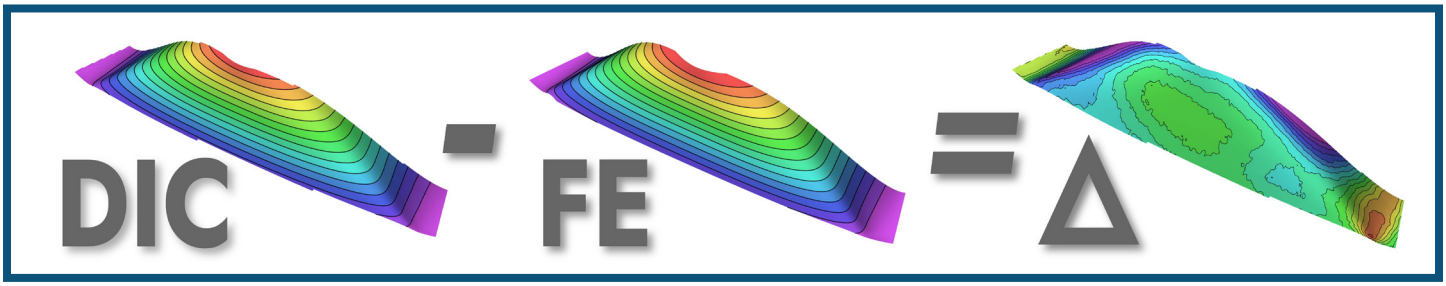
Case Study

Comparing Finite Element & Digital Image Correlation Data using VIC-3D 9



Among the new features of the powerful VIC-3D software is the ability to quickly and accurately compare FEA predictions and DIC measurements. This update will establish a soon-to-be essential workflow for engineers in many fields.

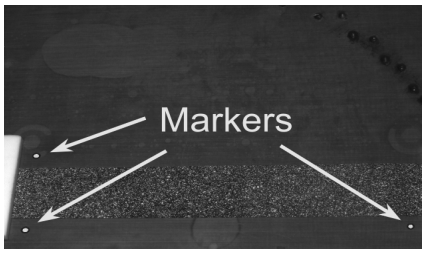
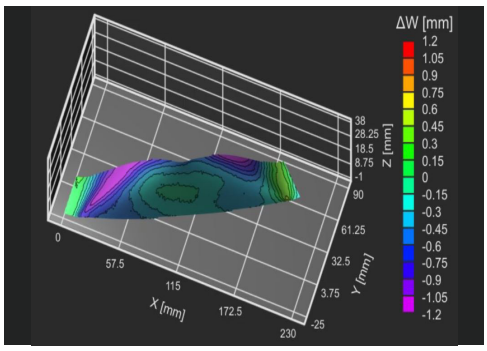


Image of tow showing coordinate system alignment markers.

Manufacturing of modern composite aerostructures is performed using automated placement of prepreg tape, or tows. A commonly used material for aerostructure manufacturing is IM7/8552-1 carbon fiber, thermoset epoxy matrix in 6.35 mm wide tow strips. Oftentimes tows such as IM7/8552-1 are placed along curved paths that can introduce defects, such as out-of-plane wrinkling in the tow. To improve understanding of wrinkle formation, a unique stereovision setup is developed and StereoDIC with VIC-3D and the VIC-Snap software are used to stitch multiple images together and obtain high resolution measurements during tow placement along a curved path with 300 mm radius of curvature.



In parallel, a series of advanced finite element simulations of the tow placement process are performed using Abaqus commercial software. To quantify the consistency of the simulation results, Python scripting was developed within Abaqus to communicate with a VTK module with the Abaqus library and convert the nodal data, including node positions and deformations, into VIC-3D format and stored in an output file. After uploading the output file into VIC-3D, a direct comparison of the FEA predictions and VIC-3D measurements for wrinkle shape, amplitude, and wavelength from the process simulations is shown, demonstrating conclusively that VIC-3D Version 9 can communicate smoothly with commercial codes such as Abaqus using existing communication protocols. Similar communication can be developed for other FEA software, such as ANSYS.

ABAQUS

ANSYS®

Data for this case study provided by S. Rajan et al. at the University of South Carolina. Experimental Mechanics 59, pp. 531-547 (2019)

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