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VIC-3D 9 with *iris*

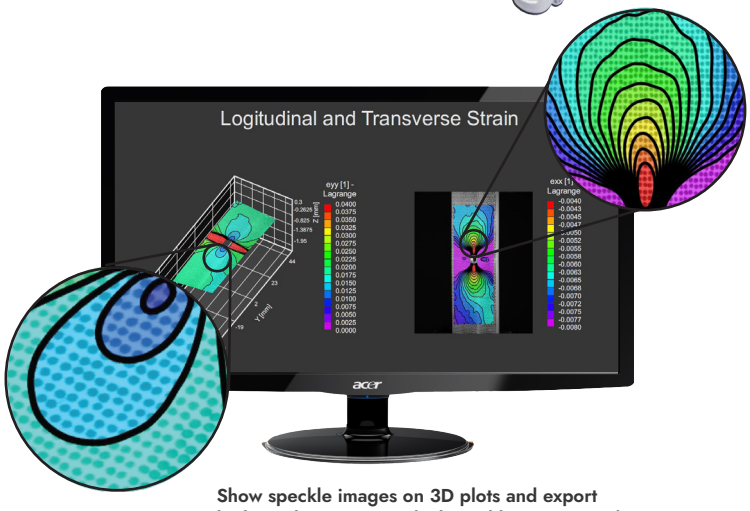
Version 9 now available

The VIC-3D digital image correlation (DIC) system from Correlated Solutions is the most powerful turnkey 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 finite element analysis (FEA) and a new graphics engine called iris, 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 to the already versatile VIC-3D software.

Some of the exciting new features include:

- All-new 3D marker tracking visualization with *iris*
- 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



Show speckle images on 3D plots and export high-resolution images (enlarged here to 600%)

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 to explore the range of industry-leading digital image correlation systems from Correlated Solutions.

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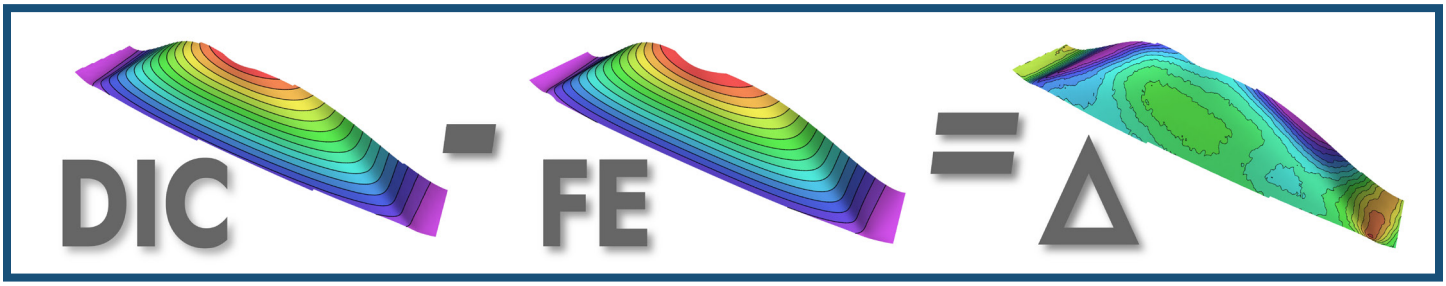
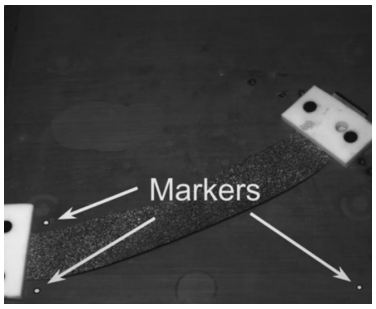
CASE STUDY - Validating Finite Element Data of a Composite Aerostructure Tow Using DIC



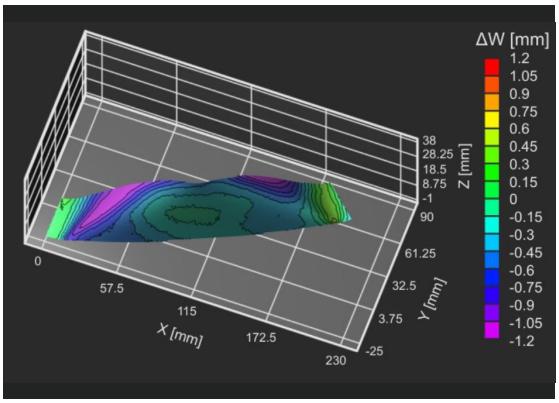
"Among the new features of the powerful VIC-3D software is the ability to quickly and accurately compare FEA predictions and DIC measurements. This update establishes an essential workflow for engineers in many fields."

-S. Rajan, University of South Carolina



Tow showing coordinate system alignment markers

Manufacturing of modern composite aerostructures is performed using the 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, high-resolution deformation measurements are obtained with the VIC-3D system during the tow placement along a curved path with 300 mm radius.



3D contour plot displaying the difference in the out-of-plane displacement (w) from the DIC measurement when subtracted from the FEA prediction

In parallel, a series of advanced finite element simulations of the tow placement process is performed using Abaqus commercial software. To quantify the consistency of the simulation results, Correlated Solutions engineers developed a Python script that enables the data from Abaqus to be exported into a compatible format that can be imported into VIC-3D. After importing the data files into VIC-3D, a direct comparison of the FEA predictions and the VIC-3D measurements for wrinkle shape, amplitude, and wavelength is shown, demonstrating conclusively that VIC-3D 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.

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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