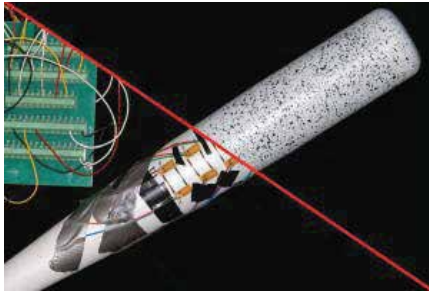


VIC-3D High Speed Systems

by Correlated Solutions, Inc.

High-Speed Capabilities

- Various camera models available offering a wide range of speeds and resolutions
- Extremely light-sensitive image sensors for easy illumination
- Up to 5,000,000 fps now available
- Completely integrated and customized turn-key systems with training
- High-powered cool LED lighting systems available

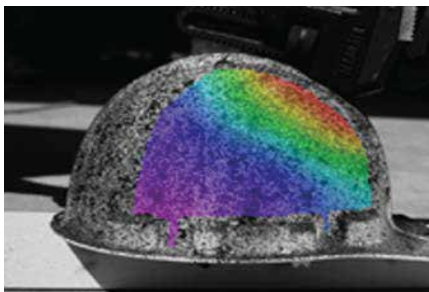
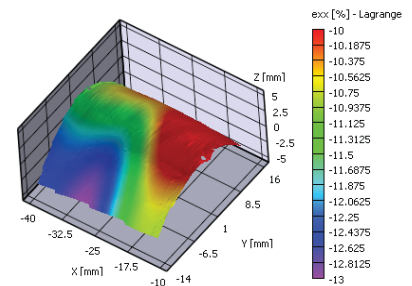


Non-Contacting

- No mechanical interaction with your sample
- Eliminates the need for strain gauges, LVDTs, extensometers, etc.
- Fast and easy sample preparation
- Rigid body motion can be easily removed
- Measure dynamic mechanical properties AND vibration at the same time

User-Friendly

- No optical isolation table needed
- Safe, simple and intuitive system
- Robust system calibration with automatic target spacing detection
- Remotely control cameras with an iOS or Android device
- Cut & paste graphs and plots into any MS Windows application
- Fast data processing with intuitive inspection and extraction tools



Full-Field Measurements

- Eliminates the need for precise strain gauge placement
- Up to 4,000,000 data points possible
- Automatically identify strain concentration locations, even in complex structures under complex loading conditions
- Fast data processing: up to 80,000 data points/second
- Data can be exported for easy FEA comparison/validation

The Correlated Solutions VIC-3D measurement system can save you valuable time while improving the quality of your deformation or strain measurements. Specimen preparation is simple and quick, and your test specimen is not affected by the measurement process. It might sound too good to be true, but it has been field-proven by professionals like you. Give us a call to find out how you can increase lab throughput, while increasing data quality.

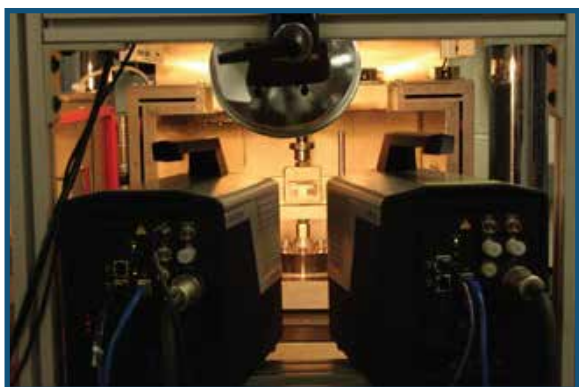
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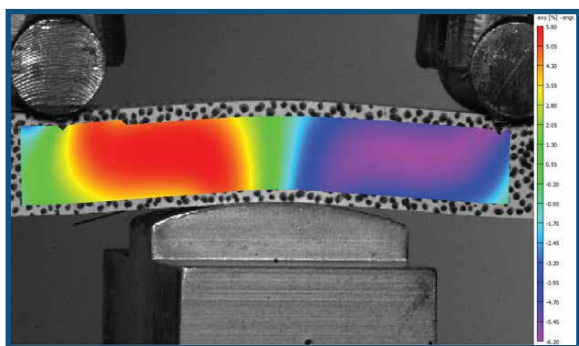
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Application Example

Ultra High-Speed Short Beam Shear Test



VIC-3D UHS camera setup



Peak shear strain before failure

Prof. Andrew Makeev and Research Engineer Brian Shonkwiler at the University of Texas Arlington Mechanical and Aerospace Engineering department operate a dynamic DIC testing laboratory. Together they conduct a variety of DIC tests ranging from quasi-static to extremely dynamic testing. In this particular example, UTA are utilizing the VIC-3D UHS-HPV-X2 system to measure dynamic properties of a glass/epoxy material. The purpose of this short beam shear test is to measure multiple material properties such as shear & axial modulus, and shear strength.

The turn-key VIC-3D UHS System from Correlated Solutions includes two Shimadzu HPV-X2 cameras which are conveniently controlled with Correlated Solutions' acquisition software VIC-Snap UHS. The images are acquired during the event, downloaded, and then post-processed with VIC-3D. The frame rate for this test was 666,667 FPS with a 200 nanosecond exposure. The specimen was speckled using a permanent marker, and an extremely bright stroboscope was used to illuminate the specimen. The impact velocity was 10 m/s, and the specimen reached approximately 3.5% shear strain at failure as shown in the image to the left.

"The purpose of the impact test is to determine how the dynamic characteristics of the material properties differ from the static properties. The importance of using the VIC-3D system is the fact that there are steep strain gradients on the face of the specimen. We would never get the strain information we need using a strain gage." - Brian Shonkwiler, University of Texas Arlington.

Specifications

	VIC-3D SR/HR/XR	VIC-3D CL	VIC-3D HS	VIC-3D U-HS
Camera Resolution	Up to 29 Megapixels	Up to 4 Megapixels	Up to 4 Megapixels	400 x 250 pixels
Frame Rate	Up to 160 fps	Up to 500 fps	Up to 500,000 fps	Up to 5,000,000 fps
Exposure Time	20µs – 10s	Down to 20 µs	Down to 368 ns	Down to 100 ns
VIC-3D Data Variables	3D displacements, strains tensors, strain rates, velocities, accelerations, and much more			
Analog Data Recording (inputs)	Up to 32 inputs	Up to 16 inputs	Up to 8 inputs	Up to 2 inputs
VIC-3D Full-Field Real-Time Analysis	Yes, up to 10Hz	Yes, up to 10Hz	n/a	n/a
VIC-Gauge 3D Real-Time Analysis (output of points, gauges, extensometers, etc.)	Yes, up to 100 Hz Up to 4 real-time analog outputs	Yes, up to 100Hz Up to 4 real-time analog outputs	n/a	n/a
Camera Disturbance Correction	Included			
Multi-System Stitching (requires multiple camera systems)	Included			
Marker Tracking	Included			
Measurement Area	mm ² to m ²			
Strain Measurement Resolution	50µε			
Strain Measurement Range	0.005% to >2000%			
VIC-3D HS Vibration Analysis Module	Available with VIC-3D Fulcrum	Available	Available	n/a

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