

Create Attractive Labs For Your Students

3D DIC Educational System



The VIC-EDU System is a low-cost solution developed for academic institutions to assist in teaching the **Digital Image Correlation (DIC)** technique to undergraduate and graduate students. The VIC-EDU system utilizes the same accurate DIC algorithms found in the powerful VIC-3D software, while allowing users to acquire data quickly and easily. The system features a simplified setup, streamlined image acquisition, and ideal post-processing features. The stereo cameras are mounted inside the protective enclosure which includes an integrated LED light source, cooling fan, and exterior USB & power connectors. The system also includes a tripod, tripod head, speckle roller, ink pad, calibration target, and a convenient carrying case.

This product is the perfect addition to engineering courses such as solid mechanics, measurements, structures, automotive design, aerospace, safety, FEA validation, and many others. Furthermore, the VIC-EDU software has the ability to process images acquired from any VIC-EDU system, which allows users to share images not only across campus, but also with colleagues at other universities. The system simply requires a computer with one available USB3 port and one available power source. Whether you are teaching students new measurement techniques or validating FEA models, this system will surely enhance the quality of your department's curriculum. Call us for a quote today!

VIC-EDU System Specifications:

| | |
|--------------------------------------|--|
| Camera Resolution | 1920 x 1200 (2.3 Megapixels) |
| Frame Rate | 20 Hz live, 0.5 Hz acquisition, 100 frames per capture |
| Exposure Time | 19 μ s - 1 s |
| Field of View | Fixed: 150 x 200 mm |
| Displacement Resolution | In-plane: +/- 2 μ m; Out-of-plane: +/- 4 μ m |
| Strain Measurement Resolution | 50 μ ϵ |
| Strain Measurement Range | 0.005% to >2000% |
| Analysis Licenses | Unlimited |
| Software Features | 3D displacements, strains, graphing tools, etc. |

To inquire about the VIC-EDU system, please email sales@correlatedsolutions.com or call 803-926-7272.

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SOLUTIONS

Laboratory Application Example

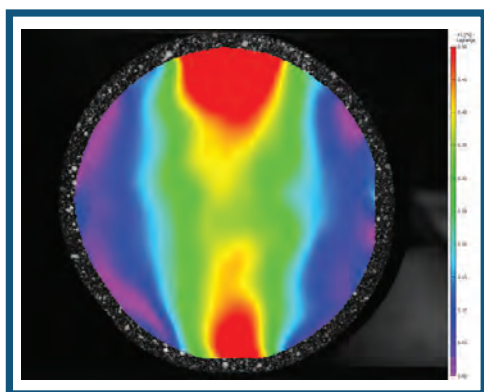
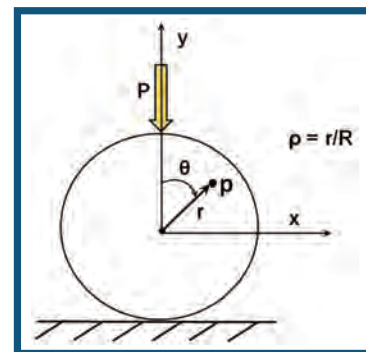
Disk in Diametral Compression

Introduction

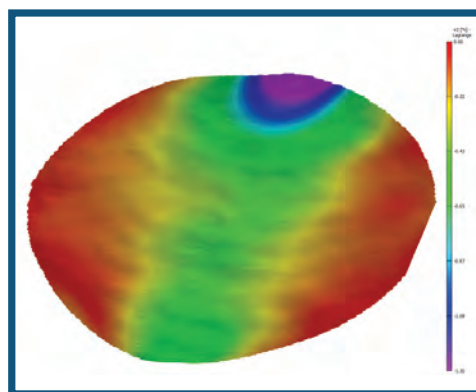
Included with your VIC-EDU System purchase are laboratory experiments that can be utilized in your classroom immediately. These experiments will not only help you teach the digital image correlation (DIC) measurement technique, but they will also educate your students on how to obtain accurate full-field deformation measurements on materials under complex loading conditions. The system includes laboratory experiments that cover topics from teaching the basics to of DIC to more complex applications, which may be used for both undergraduate and graduate level courses.

Experiment Example

In the following example a disk is loaded in diametral compression, and the VIC-EDU system is used to measure the full-field strains which are then compared to the students' predictions. As part of this particular laboratory, students will be provided basic theoretical background to predict the surface displacements and strains that they will measure on the disk. To obtain the measurements, students will learn how to (a) prepare the specimen surface and apply a usable, high-contrast speckle pattern, (b) arrange the VIC-EDU system to acquire images that can be used for stereo analysis, (c) calibrate the VIC-EDU system for Stereo DIC, (d) acquire and store images during mechanical loading of the specimen, (e) perform post-processing to obtain results using the stereo images and (f) compare the experimental results to the theoretical solutions. Below is an example of the DIC test data for this experiment. The left figure shows the major principal strain (e_1) field at max load overlaid on to the image from the VIC-EDU system, and the right figure shows the minor principal strain (e_2) field at max load shown in 3D.



3D major strain (e_1) field data



3D minor strain (e_2) field data

The displacement and strain values are then compared to the students' predictions, which are then analyzed and discussed resulting in a powerful educational experience. The VIC-EDU system may also be used on virtually any other 3D quasi-static application to teach how the measurement technique can be applied to multiple applications. The VIC-EDU software is free to students who are using this system adding flexibility for the instructor.