

Vibration Measurement Solutions

Non-Contacting Measurement Technology

[Technology Overview]

Our vibration measurement solutions combine the versatility of our video image correlation system **Vic-3D** with a high speed videostroboscope. This permits the simultaneous measurement of all **three displacement axes** on the entire specimen surface. As the technique uses white-light speckle correlation, the actual object movement is measured and the Lagrangian **strain tensor** is available at every point on the surface. Our measurement systems can easily cope with large vibration amplitudes and can be employed up to several thousand Hertz.



Video stroboscope.



Vic-3D Measurement System.

Our **videostroboscope** systems can be used to visualize and record in slow-motion - on the electrodynamic shaker, the engine test stand, at non-accessible locations, on large or microscale objects. The videostroboscope is easy to use and provides a **low cost** alternative to high speed cameras. The systems offer many of the features that conventional stroboscopes lack, such as automatic recording, monitoring and analysis tools. The video stroboscope is a turn-key system for observation and recording of periodical motion up to frequencies of **50 kHz**. Depending on the frequency or velocity of motion it is possible to strobe the CCD camera or the illumination.

Combined with our three dimensional **speckle correlation** measurement systems, the videostroboscope turns into a **multi-axis vibrometer**. The system does not only measure all three axes of vibration, but also measures the complete strain tensor on the entire surface. The specimen only needs to be prepared with a random pattern (e.g., using spray paint) and therefore no significant mass is added to the object under test. The technology can be used to study **sub-micron motions** while being capable of handling large vibration amplitudes.

[Measurement Systems]

We offer complete **turn-key** measurement systems for a wide range of full-field deformation and vibration measurement tasks. Our systems and analysis software are designed with the user in mind and are simple to set up, **calibrate** and operate. Some of the features of our systems include:

- White-light system does not require lasers
- Quick system setup and calibration
- Simple specimen preparation using paint
- Measures three displacement axes as well as strain tensor
- Robust & reliable calibration methods
- Synchronized analog data acquisition
- High vibration amplitudes
- Sample size <1mm and >10m possible
- Measures vibration amplitude and phase
- Full-field technique provides millions of data points
- Systems for non-cyclic events using high-speed cameras (1,000Hz - 100,000Hz)

We also specialize in **custom measurement systems** for demanding applications, e.g., high magnification systems using stereo-microscopes, high temperature measurements in environmental chambers or ultra-high speed systems for explosive or impact events. Please, contact us at engineering@correlatedsolutions.com if you would like to discuss your applications.

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