Bulletin
TD970

Single Camera Video Extensometer

Figure 1. Model HESC Video Extensometer measuring strain on a plastic specimen.

Tinius Olsen proudly introduces a new, sophisticated video extensometer for the precise, non-contact measurement of specimen strain. Our new Video Extensometer uses a high resolution monochrome camera, advanced high speed image processing, and cool lighting such that the point to point real-time video processing technology is capable of achieving, and exceeding, ASTM E83 Class B1 and ISO 9513 Class 0.5 with continuous measurement through tensile break or compressive rupture.

Key Features:

- Non contacting strain measurement
- High resolution with better than 1/100,000 of lens FOV
- High accuracy of 0.5%
- Simple specimen preparation
- Compact, cool, specimen lighting included
- Automatic gauge search and find
- “Letter box” test specimen for memory conservation.
- Multiple longitudinal and transverse gauge lengths are possible

The Video Extensometer camera is available in different versions, namely one suitable for low extension materials, Model LESC, and one suitable for high extension materials, Model HESC. The high resolution, low extension video extensometer is supplied with a 25mm field of view lens designed specifically for materials testing. The high resolution, high extension video extensometer is supplied with a general purpose lens, giving a field of view of up to 1,000mm. This range of technology extends video extensometry solutions for almost every type of application, including, but not limited to:

- Metals (including thin wire)
- Elastomers
- Textiles
- Plastics
- Composites

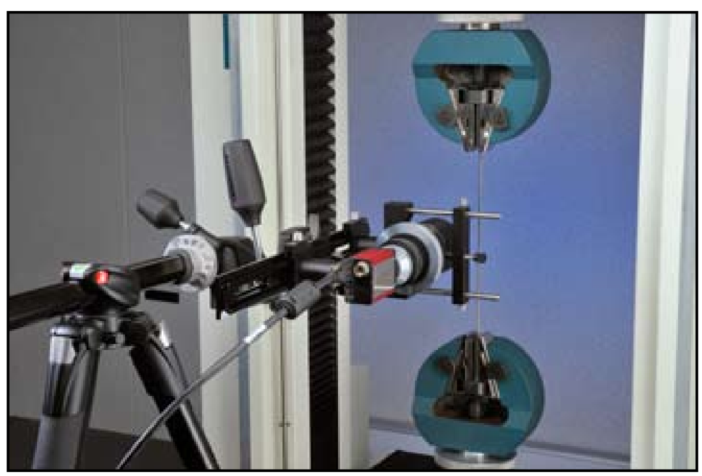

Figure 2. Model LESC Video Extensometer measuring strain on thin steel rod.

Models LESC and HESC

The Video Extensometer is also supplied with cool lighting; while the extensometer is more than capable of following targets in regular daylight conditions, using lighting prevents any tracking loss of target from changes to those ambient lighting conditions.

Any visible marking can be used for pattern recognition, and these can be natural patterning on the specimen surface, pen marks, blob markers, punched gauge marks or a sprayed speckle pattern. The pattern recognition algorithms work on identification of unique small facets in the video image, so the more detailed the pattern, the more accurate and precise the pattern recognition.

The way in which the system works is that the image is acquired and the pattern recognition technology locks on to two targets, which equate to a gauge length. These two targets can be defined by the user, meaning that the user can set these to any gage length as they see fit. As the specimen is tested, the Video Extensometer tracks the point to point movement of the two targets from frame to frame and the strain data is calculated in real time. Multiple gauge lengths are possible in both longitudinal and transverse directions, allowing the determination of r and N values, with high system resolution achieved using our sub-pixel interpolation algorithms.

All the measurements and outputs from the Video Extensometer are time stamped and can be archived for later reference. Additionally the uncompressed video output from the camera can be recorded for post-test measurements and analysis.

Figure 3. Model LESC Video Extensometer measuring the strain of thin wire.

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