How the system works

At the heart of the Video Gauge is the specialised software that allows high resolution measurement. The video system uses pattern recognition technology, which detects minute changes in the sample under test. The pattern recognition blocks are used to set up the required measurement points (it is a point to point measurement system). For instance two blocks equates to a single strain gauge or one block a displacement transducer (LVDT) etc. You can use up to 100 blocks while still taking real time measurements and you can also use each block to make multiple measurements. All resulting measurement data is automatically saved to a text limited file, so further analysis of the data becomes very easy. The real time preview graph facility also allows you to track the results as the measurements are carried out. As the system uses video technology, you have the option to record the video, so you can rerun new tests offline. Tests carried out in collaboration with one of our partners have shown the Video Gauge to have a measurement resolution and accuracy which is equivalent or better than the best competing optical system on the market.

As the Video Gauge uses camera technology the system is easily scalable by simply changing the lens on the camera. So if you use a macro lens you can measure strain on the smallest of test samples and if you use a wide angle lens you can take measurements on a complete structure such as a bridge or dam.

The Video Gauge has the capacity of taking inputs from eight different cameras simultaneously (with all measurements synchronised, time stamped and saved to the same text limited file). So you have the option of looking at many individual areas of the item under test with the same system.

Regardless of your application the Video Gauge offers the user a versatile instrument that can be used to solve efficiently a large number of measurement problems. There are two main application areas where the system is being used.

The benefits of our system

The non-contact method can be used even when historical methods cannot

Simple to use and quick to set up with little or no sample preparation required

Measures strain (tension, compression, shear), Poisson's ratio, bend angle, displacement

Replaces many other measurement instruments such as strain gauge, extensometers, LVDTs, accelerometers or goniometer

Suitable for destructive testing

Real-time operation and graphical display of results

Multiple simultaneous measurements

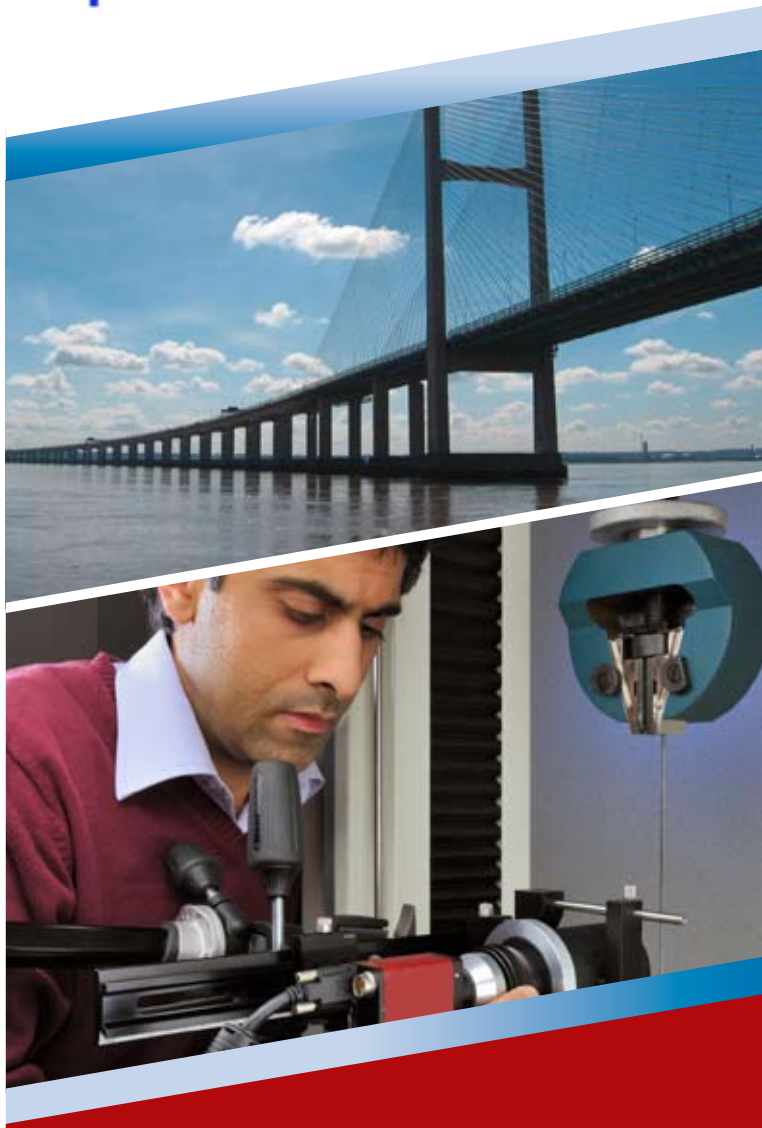
Suitable for wide range of sample sizes; from large to microscopic

For more information

Further information, including a number of case studies, can be found on our website. You may well find a case study that is similar to your own measurement problem but even if you don't please contact us – we are always happy to receive new challenges.

Imetrum Limited
4 Farleigh Court | Old Weston Road | Flax Bourton
Bristol | United Kingdom | BS48 1UR
Tel: +44 (0)1275 464443
General enquiries: info@imetrum.com
Sales enquiries: sales@imetrum.com

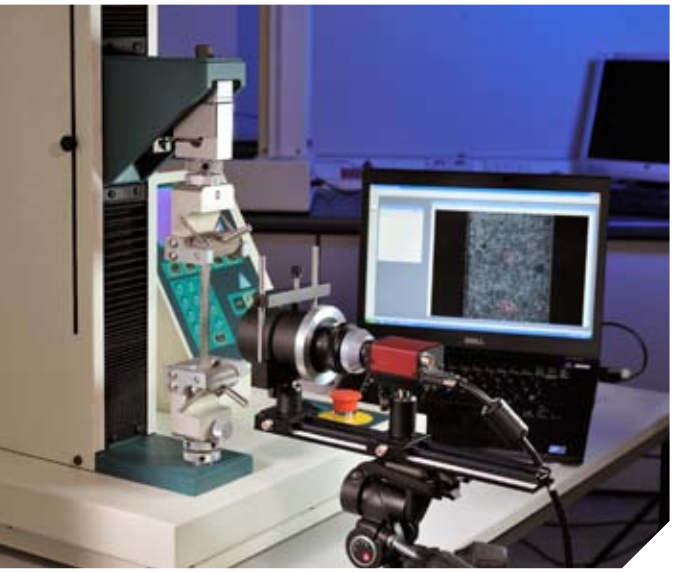
iMETRUM
NON CONTACT PRECISION MEASUREMENT



Optical strain measurement
in materials and structures

www.imetrum.com

Imetrum's hi-tech business is a spin-out from the University of Bristol. More than 15 years of research and development has made us one of the leaders in the field of video-based, non-contact precision measurement used in material testing and structural monitoring.



Our measurement system (known as the Video Gauge) was first launched in 2007 and is now used both within academia and industry. Recent customers include Rolls Royce, Airbus, Thyssen Krupp, and BAE Systems.

The Video Gauge has many benefits which ultimately save the user time and money, while providing a measurement capability far beyond any technology on the market today.

Material testing

The Video Gauge is well suited to:

- Batch and specialist testing
- Testing a wide range of different materials (metals, plastics, polymers, rubbers, composites, textiles, biological samples, etc)
- High (800°C) and low (-100°C) temperature testing
- High strain > 100%
- High speed (impact) testing using high-speed cameras
- Very small (<1mm) or delicate samples

The Video Gauge options allow you to measure:

- Displacement
- Rotation
- Strain
- Shear
- Modulus
- Poisson's ratio
- Proof stress, ultimate stress, ultimate failure strain

The voltage input/output module can be used to feed load or displacement outputs from the test machine into the Video Gauge where they are logged alongside the Video Gauge's measurements. Similarly, strain measurements made by the Video Gauge can be fed via the voltage outputs to your existing data-logging equipment or into your test machine for feedback control.

Typical material tests where the Video Gauge has been used are:

- Standard tensile and compression testing
- Crack growth monitoring
- Cyclic/fatigue testing
- In-plane shear
- Multiple point bend test

Structural monitoring

In today's world there is an on-going need to understand the health and welfare of large civil engineering structures, such as buildings, bridges, dams, etc. The resulting data can be used to determine strategies to address identified problems or alternatively develop cost efficient maintenance strategies and assess their effectiveness. With a number of high profile problems over the last five years, there is an understandable growing interest in the field of structural monitoring. The Video Gauge has demonstrated that it is ideally suited to low cost and effective monitoring applications. Some example application areas include:

- Bridges
- Dams and levies
- Buildings
- Embankments
- Railway infrastructure
- Aircraft

Recent monitoring projects have shown that the Video Gauge is able to be set up very quickly (one hour) when compared to conventional technology (three days) and it is able to capture a considerable amount of usable data.

The Video Gauge offers continuous 24/7 monitoring of:

- Displacement
- Velocity
- Rotation
- Bending

The voltage input/output module provides a versatile interface between the Video Gauge and existing sensors, data-loggers and monitoring equipment. The output of other sensors can be fed into the Video Gauge where they are logged alongside the Video Gauge's own measurements. The module's voltage outputs can be driven from any of the Video Gauge's measurements and fed into existing logging or monitoring equipment.

www.instrumentation.it **INSTRUMENTATION DEVICES SRL**
Via Acquanera 29, 22100 COMO (Italy) tel. +39.031.525391 - fax +39.031.507984 - info@instrumentation.it