

BRITISH SOCIETY FOR STRAIN MEASUREMENT

Strain Analysis using Resistance Strain Gauges (Level 2)

The course uses demonstrations and hands-on experience to develop an effective understanding of strain and strain measurement using strain gauges. It is intended for engineers and technicians involved in experimental stress analysis, the validation of load-carrying components, monitoring of structures, and the design and development of sensors. Some previous experience with strain gauges is desirable.

Day 1

- 09:30 Registration
 - Strain and strain measurement methods
 - Electrical resistance strain gauges
 - Bridge circuits for strain measurement and transducers
- 12:00 Lunch
- 13:05 Circuit practice
 - Circuits with long lead wires
- 16:40 End of day 1

Day 2

- 09:00 Calibration
 - Foil strain gauge details
 - Surface preparation for gauge installation on aluminium, steel and PVC
- 12:20 Lunch
- 13:05 Gauge handling and bonding
 - Practice with cyanoacrylate and epoxy adhesives
- 16:40 End of day 2

Day 3

- 09:00 Wiring for quarter bridge on aluminium, steel and PVC
 - Intra-bridge wiring for full-bridge transducer
- 12:20 Lunch
- 13:05 Installation checks and documentation
 - Installation preparation
- 16:40 End of day 3

Day 4

- 09:00 Strain limit of gauge installations
 - Determination of stress from measured strains
 - Correction of measured strains
 - Measurement using a rosette: principal values
- 12:20 Lunch
- 13:05 Calibration of a load transducer
 - Measurement and plotting of strain near a stress concentration
 - Maximum stress at a discontinuity
- 16:05 End of course

Course Lecturers

The course will be run by experienced lecturers from Vishay Measurements Group UK and Oxford Brookes University.

Group Size

Hands-on sessions form an important element of the course. It is therefore necessary to restrict the group size to about 12.

Course Fee

Inclusive of Code of Practice (currently under review), Reference Book, course materials, lunches and refreshments.

£820 + VAT

Overnight Accommodation

Details of local hotels are available on request.

Certification

The measurement of strain through the medium of a strain gauge depends for its success on a proper and acceptable installation of the strain gauge itself. For structural testing, design evaluation and sensor operation the installation of strain gauges is a skilled operation which requires considerable practical ability and know-how on the part of the installer. A poorly positioned or inadequate installation, resulting in erroneous measurements being taken, could turn out ultimately to have disastrous consequences.

The provisions of modern day consumer protection legislation and the requirements of various safety regulations make it necessary for critical measurements on components and structures to be carried out to an approved standard by competent persons who are qualified in the best techniques available.

To demonstrate your competence as a strain gauge user you should hold a BSSM Certificate. The certification scheme operates at three levels and complies with the European Standard EN473:1993. The levels cater for staff with a wide range of competencies and responsibilities, from strain gauge installation to analysis and design.

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