



Strain Gage Technology Workshop

STRAIN GAGE TECHNOLOGY – THREE DAYS

In this comprehensive, hands-on workshop, participants make several complete strain gage installations, including electrical connections, check-out, and environmental protection; and use appropriate readout instrumentation to verify results of their own installations.

A wide range of strain measuring instrumentation is described in detail, and guidelines for proper instrument selection and usage are thoroughly reviewed. Participants have an opportunity to examine and familiarize themselves with all instruments on display. In the instrumentation portion of the program, some electrical circuitry is discussed. Familiarity with Ohm's law, series and parallel circuits, and the Wheatstone bridge is helpful.

Topics include:

- **Strain Gage Characteristics:** Gage Factor, Temperature Compensation, Sensing Alloys, Transverse Sensitivity, Strain Limits, Fatigue Endurance
- **Installation Techniques:** Surface Preparation, Adhesive Selection, Gage Installation Procedures and Check-Out, Leadwire Attachment, Protective Coatings
- **Gage Installations with Epoxy, Epoxy-Phenolic, and Cyanoacrylate Adhesives Room-Temperature:** Installation, Handling Heat-Curing Adhesives, Clamping Techniques, Leadwire Attachment, Protective Coatings, Measuring Strain Level
- **Special Gage Installation Techniques for Measurement Over Wide Temperature Ranges:** Gage Selection, Gage Performance Characteristics, Temperature Effects, Leadwire Selection and Attachment, Protective Coating Systems
- **Temperature Measurement Techniques:** Foil Temperature Sensors, Cryogenic Environments, Linearizing Networks
- **Strain Gage Circuitry:** Quarter, Half, and Full Bridges; Leadwire Compensation
- **Bridge Excitation:** Power Levels, Self-Heating
- **Static Measurements:** Strain Indicator Characteristics, Multi-Channel and Computer-Based Systems
- **Dynamic Measurements:** Signal Conditioning, Frequency Response, Readout Instrumentation
- **Noise Reduction:** Shielding, Grounding, Leadwire Considerations
- **Calibration Techniques**
- **Discussion of Specific Problems as Requested by Participants.**