FLUKE®

Building Applications

Two-day IR specialty course*

This 16-hour course will teach the applications of infrared thermography for advanced building diagnostics. Participants will learn how infrared is used to analyze energy, moisture, and mechanical related problems in all types of structures, residential and commercial. Advanced troubleshooting techniques will be covered including ways in which one can better utilize their thermal imaging system to perform qualitative surveys of buildings.

A section dedicated to examining infrared related standards and building inspection methodologies is included. Attendees will learn both where infrared is applied successfully and also special circumstances where the technology may encounter limitations or possibly mislead the thermographer in their analysis.

*Level I or extensive thermographic experience is a recommended pre-requisite for this course.

Course outline

8:00am-5:00pm

Course introduction and overview

IR equipment

- Review of IR image quality
- In-depth analysis of IR equipment specifications
  - Types of thermal imagers for applications
  - What specifications are best for building/roof and electrical/mechanical applications

Review of basic heat transfer theory plus new concepts

- Energy vs. temperature, conduction, convection, state change, thermal capacitance, thermal diffusivity

Advanced radiation theory for the building thermographer

- Review of IR radiation basics
  - How IR radiation behaves—reflection, absorption, transmission
- Advances principles of temperature measurement
  - Is temperature measurement required?
  - Discussion on emissivity and thermal background
  - How to measure emissivity and thermal background
  - Other considerations for temperature measurement
- In-depth analysis of spatial and measurement resolution
  - Why it is important for the building thermographer to understand
  - How to calculate and analyze resolution capabilities of your thermal imager

Advanced principles of building envelope inspections

- Defining the scope of service and inspection protocols
- Review of inspection fundamentals
- Review of inspection fundamentals
- In-depth discussion and examples of the following:
  - Conduction (insulation) inspections
    - Conditions needed, patterns detected

Fluke authorized training is provided by our partner,

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**Publicly scheduled courses may vary by region and day of the week.

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Building Applications
Course outline (continued)

8:00am–5:00pm

Advanced principles of building envelope inspections, continued

- Air leakage inspections
  - Conditions needed, patterns detected, seasonal changes, pressure dynamics, using IR and a blower door
- Moisture inspections
  - Conditions needed, patterns detected, limitations of IR
- Special circumstances and thermal patterns detected
  - Limitations of using IR for building applications

Inspecting electrical and mechanical systems in buildings

- Electrical applications
  - Conditions needed
  - Types of problems detected
    - Lighting panels, disconnects, breakers, outlets/switches
- Mechanical applications
  - Conditions needed
  - Types of problems detected
    - Motors and motor bearings, couplings, belt drives, steam traps, underground lines, hydronic coils
- How to prioritize electrical and mechanical problems

Low-slope roof moisture inspections

- Conditions needed
- Patterns detected
- Limitations of IR

IR standards and procedures

- In-depth discussion of all applicable standards and procedures that a building thermographer should understand, including:
  - Qualification vs. certification
  - IR application standards
    - ASTM C-1060, ASTM E-1186, ASTM 779, RESNET, ISO 6781, Candian NMS

For more information go to **www.fluke.com/infraredtraining** or contact your local authorized Fluke representative.

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