

INFRARED THERMOGRAPHY FOR INTEGRATED PEST MANAGEMENT PROFESSIONALS

1. Basic Infrared Theory

- Heat transfer
- Electromagnetic spectrum
- Emittance, reflectance, and transmittance
- Atmospheric transmission
- IR wavebands and lens materials

2. Infrared Equipment

- Selection criteria
- Range and level settings
- Class demonstrations
- Manufacturer equipment presentations (optional)
- Hands-on use in class

3. Electrical System Inspections

- Theory and thermal signatures of problems
- Airborne inspection of transmission lines
- Ground-based inspection of distribution systems
- Substation inspections
- In-plant inspection of:
 - transformers
 - bus
 - switchgear
 - fuses
 - circuit breakers
 - cable trays
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

4. Mechanical System Inspections

- Theory and thermal signatures of problems
- Rotating equipment
- Power transmission components
- High-temperature insulation
- Fluid flow including steam systems, heat exchangers, cryogenics, etc.
- Active thermographic inspection techniques
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

5. Building & Roof Moisture Inspections

- Theory and component construction
- Insulation & material moisture characteristics
- Inspection techniques: interior & exterior
- Weather variables and models
- Required site conditions
 - creating sufficient delta-T
- Pre-inspection procedures
- Thermal signatures of latent moisture
- Inspection, data recording, marking and mapping
- Destructive and non-destructive moisture verification
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

6. Building Envelope Energy Loss Inspections

- Theory and component construction
- Insulation & material characteristics
- Inspection techniques: interior & exterior
- Weather variables and models
- Required site conditions
 - creating sufficient delta-T
- Pre-inspection procedures
- Inspection and data recording
- Verification of data
- Conduction losses by insufficient, missing, damaged or improperly-installed insulation:
 - weather variables and influences
 - thermal signatures
- Convection losses by uncontrolled air movement
 - natural and forced convection
 - thermal signatures
 - pressurization/depressurization techniques
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

7. Implementing an IR Predictive Maintenance Program

- 9 steps to setting up a program
- Integrating with other predictive technologies
- Cross-verifying with other predictive technologies
- Why programs fail, how they succeed

8. Pest Detection Inspections

- Detection techniques: direct and indirect
- Required site conditions
- Creating sufficient delta-T via active thermography
- Verification of data
- Inspection and data recording
- Preparing inspection reports
- Standards