

## INFRARED INSPECTION OF ELECTRO/MECHANICAL SYSTEMS

### 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. 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