

<p style="text-align: center;">DISTANCE LEARNING INFRARED INSPECTION OF PETROCHEMICAL FACILITIES</p>
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1. Basic Infrared Theory

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

2. Infrared Equipment

- Selection criteria
- Range and level settings
- Image and data recording
- Self-directed learning activities for hands-on use

3. Infrared Electrical System Inspections

- Theory and thermal signatures of problems
- Seven types of detectable defects
- Conducting an inspection
- Safety practices
- Confirming exceptions
- Data recording
- Standards for inspections

4. Infrared Mechanical System Inspections

- Theory and thermal signatures of problems
- Rotating equipment
- Power transmission components
- High-temperature insulation
- Steam systems, process equipment, heat exchangers, storage vessels
- Active thermographic inspection techniques
- Safety practices
- Confirming exceptions
- Data recording
 - Standards for inspections

5. Structural 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
- Infrared inspections of boilers and heater tubes

6. 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
- Generating standards-compliant reports