



Infrared Application: Electrical Inspection

Electrical Inspection Course Summary

This four-day course will provide a clear understanding of the electrical inspection application, dispel myths, and provide direction for establishing a meaningful inspection program.

The course includes basic electrical theory; infrared theory as applied to electrical systems; operating procedures;

temperature and emissivity measurement techniques; how to account for the effects of wind, load, spot size, and distance when measuring and evaluating electrical components; establishing maintenance priorities; and "how to" inspection techniques.

Electrical Inspection Course Outline

Introduction/Overview

- Course Overview
- Infrared Condition Monitoring
- Electrical Thermography Introduction, Purpose, Benefits
- Thermal Energy And Electrical Theory

Basic Electrical Theory

- Understanding Voltage, Current And Resistance
- Conductors / Insulators / Resistors
- Ohm's Law / Power / Energy
- Generators / Motors
- Transformers / Capacitors

Heat Transfer & Thermal Radiation

- Heat, Energy And Temperature
- Heat Transfer Principles
- Electrothermal Energy Conversion
- Load / Resistance
- Thermal Capacitance
- Radiation Concepts
- Radiation, Transmittance, Absorbance, Emittance
- Thermal / Solar Loading

Qualitative Thermography

- Performance Characteristics Of Thermal Imaging Instruments
- Imaging Concepts
- Real Or Apparent Anomalies
- Image Interpretation
- Thermal And Image Focus
- Dynamic Range, Level, Isotherms, Inverting

Quantitative Thermography

- Methods Of Temperature Measurement
- Performing Accurate Temperature Measurements
- Factors Affecting Accurate Measurements
- Temperature Rise / Direct Temperature Measurement
- Load Factor Corrections
- Emissivity Measurements
- Error Potential In Radiant Measurement

Field Trip

In-Plant Field Inspections Will Take Place

Instrument Considerations

- Types And Advancements Of IR Instruments
- Long Wave Or Short Wave
- Thermal Resolution
- Spatial Resolution
- LW/SW Instruments
- Types & Advances Of Infrared Imaging Instruments
- Resolution - Thermal And Spatial
- Target Size/Distance
- Filters/Atmosphere

IR Electrical Inspection Techniques

- Sources Of Thermal Pattern Variations
- Performing An IR Electrical Inspection
- Aerial Thermography, Mobile (Vehicle) Inspection
- Good Report Techniques/Presentation Methods
- Other Tools Of The Trade
- Establishing Maintenance Priorities
- Recording Techniques Safety
- Electrical Inspection Myth
- Baseline Trending

NETA CTD Program Recognized Course

CTDCs: 38 hours

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