



Level II Infrared Certification

Level II Course Summary

AIRT's Infrared Certification courses are designed to meet and exceed SNT-TC-1A recommended practices. This hands-on course will assist you in furthering your operating skills, developing new inspection procedures and applications, advancing your infrared P/PM program or consulting services, utilizing IR trending or software programs, performing advanced NDT applications and

attaining superior measurement skills for improved accuracy and diagnosis. Advanced theory, applications, equipment operations, thermal analysis and inspection techniques, marketing, plus much more, is presented in a simple, easy-to-learn, hands-on fashion. Course certificate, exam, one-on-one sessions, post course support and manual upgrades are also included.

Level II Infrared Certification Outline

Intermediate Thermal Infrared Physics

Basic Calculations for Three Modes of Heat Transfer

- Conduction Principles and Elementary Calculations
 - Thermal resistance
 - Heat capacitance
- Convection Principles and Elementary Calculations
- Radiation Principles and Elementary Calculations

The Infrared Spectrum

- Planck's Law / Curves
- Spectral Emittance of Real Surfaces
- Semi-Transparent Windows and Filters

Radiosity Challenges

- Blackbodies – Theory / Concepts
- Emittance Problems
 - Specular and Diffuse Emitters
 - Lambertian Emitters Angular Sensitivity
 - Effects of Emittance Errors
 - Reflective Problems
 - Quantifying Effects of Unavoidable Reflections
 - Theoretical Corrections
 - Transmittance Problems
 - Quantifying Partial Transmittance
 - Theoretical Corrections

Intermediate Thermal Infrared Physics (cont'd)

Resolution Test and Calculations

- IFOV and FOV Measurements and Calculations
- MRTD
- Slit Response Function-Measurement, Calculations, Interpretations and Comparisons
- Resolutions vs. Lens and Distance
- Image Data Density

Level II Thermal Infrared Operations

IR Measurement & Quantification

- Advanced Measurements
- Quantifying Target Surface Emittance
- Quantifying Temperature Profiles

Image Processing High Speed Data Collection

- Producing and Recording Accurate Images

Special Equipment for "Active" Techniques

- Hot or Cold Fluid Energy Sources
- Heat Lamp / Flash Lamp / Laser Energy Sources

Reports and Documentation

Level II Infrared Applications

Active Applications

- Insulation Flaws
- Delaminations in Composites
- Bond Quality of Coatings
- Location of High Heat Capacity Components
- Electronics

Filtered Applications

- Sunlight
- Furnace Interiors
- Semi-Transparent Targets

Transient Applications

- Imaging a Rapidly Moving Process
- Imaging from a Vehicle

Software

- IR Software
- Asset Management

Advanced Temperature Measurement Methods

- Isotherm / Spot Measurement / Profiles
- Accurate field quantification

Advanced Applications

- Electrical Thermography
 - Accounting for Load & Wind Effects
- Mechanical Systems
 - Performing Meaningful Inspections
 - Baseline and Trending

NETA CTD Program

Recognized Course

CTDCs: 38 hours

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The Academy of Infrared Training also offers economical **On-Site or In-House Training.**

We can tailor this training to your company's specific interests. In addition, you save on travel costs, and your technicians remain on-site and available for emergencies.



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