



Technical Diagnostic Services Training Institute

Infrared Training for Level II Certification 36 Hours

Who should attend?

Designed for students looking for Level II Infrared Thermography Certification. (ASNT Standard CP-105 and SNT-TC-1A requires High School diploma plus 32 hours from accredited engineering school or 18 months in required field) Prerequisite = Level I Certification - "student is required to assign a numerical value to the target in the field of view".

Course Description:

Students will further their operating skills with the infrared camera, develop new inspection procedures and applications, advance your infrared P/PM program or consulting services, utilize IR trending or software programs, perform advanced NDT applications and attain superior measurement skills for improved accuracy and diagnosis.

This is a five-day course for the application of quantitative thermal imaging and temperature measurement for P/PM, Condition Monitoring, Quality Assurance and Forensic Investigations.

The course covers advanced infrared theory, equipment calibration, error sources, cross-verification with contact thermometers, advanced equipment operation, use of windows and filters, assigning temperature limits and repair priorities, and quantitative report generation.

Students are encouraged to bring their own imager for individualized training or to learn how to use it more effectively.

TDSTI's Level II - as a Quantitative Infrared Course - (ASNT Standard CP-105 and SNT-TC-1A requires High School diploma plus 32 hours from accredited engineering school or 18 months in required field) Prerequisite = Level I Certification - "student is required to assign a numerical value to the target in the field of view". Successful completion of the Infrared Training for Level II Certification course will receive Level II Thermographer Certification.

TDSTI

15825 Trinity Blvd., Fort Worth, Texas 76155
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Course Outline

1. Thermometry Fundamentals

- a. Temperature scales and conversions
- b. Absolute and relative temperatures
- c. Classes and benefits of contact thermometers
- d. Classes and benefits of non-contact thermometers
- e. Identifying and reducing errors

2. Advanced IR Theory

- a. Units for measuring radiant power
- b. Relationship between power and temperature
- c. Planck's blackbody curves

3. Temperature Measurement Error Sources and Corrections

- a. Calibration
 - i. how IR sensors are calibrated
 - ii. how to check calibration
 - iii. calibration/accuracy specifications
- b. Reflectance
 - i. shielding techniques
 - ii. measuring & compensating for with direct and reflector methods
- c. Emittance
 - i. how emittance varies
 - ii. using default and table values
 - iii. how to measure emittance

d. Transmittance

- i. filters to view through materials and atmospheres
- ii. filters to measure temperatures of material surfaces and atmospheres
- iii. measuring material transmittance

e. Target Width/Distance Ratios

- i. calculating target size/distance

4. Traceable Temperature Limits: How Hot is too Hot

- a. Delta-T classifications
 - i. NETA, Mil Spec, and other standards
- b. Absolute temperature classifications
 - i. ANSI, IEEE, NEMA standards for electrical systems
 - ii. correction formula for load and ambient temperature
 - iii. other standards for mechanical systems
- c. Developing limits for your equipment

5. Preparing Quantitative Reports

- a. Data to gather
- b. Report procedures
- c. Image processing software capabilities
- d. Report generation software capabilities

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