

LEVEL III THERMOGRAPHY CERTIFICATION TRAINING

The Level III Master Thermographer certification training is for Level II thermography professionals who are seeking to become infrared experts in their field. Learn the most advanced thermographic inspection and application techniques and proper camera selection and prepare to run your own IR inspection team through discussions of infrared program management, calculating program ROI, what standards to follow, how to develop inspection procedures, and much more.

LEVEL III TOPICS INCLUDE:

- Identifying safety requirements for thermographers and accompanying personnel for IR surveys
- Recognizing key elements of a successful IR Thermography program
- Understanding the process used to create an IR procedure
- Learning how to create an IR thermography budget
- Developing a written practice for Level I, Level II and Level III thermographers
- Creating a custom IR report template and proper reporting procedures

ACCREDITATION

The learning objectives, contact hours, and written exam of ITC's courses are based on the requirements outlined by ANSI/ASNT CP-105 of the American Society for Non-Destructive Testing.

- 32 hours (24 ITC certification renewal credits)
- This course is eligible for 32 NETA Continuing Technical Development Credits (CTDs).

INSTRUCTORS

Infrared courses are developed and taught by ITC's Level III, ASNT Level III, or EPRI Level III Instructors. ITC's domestic and international training staff includes several Level III thermographers certified by ASNT and BINDT with over 100 years combined infrared thermography applications experience. The Level II infrared training courses are taught by certified instructors with extensive experience in a wide variety of infrared thermography and thermal imaging applications.

SOFTWARE TRAINING

An overview of image analysis and reporting is provided for the latest FLIR software.

CAMERA TRAINING

Our instructor led training classes cover basic camera operation. We highly recommend viewing one of our free on demand courses for your specific FLIR camera before coming to class. Please visit <http://www.infraredtraining.com> to view available courses.

Please note that on demand courses may not be available for some camera models. If a course is not offered for your camera type, please refer to your user's manual. All manuals and datasheets for FLIR cameras can be found at <http://support.flir.com>. For other vendors please visit the vendor's website.

TOPICAL OUTLINE

1. Introductions
2. Certification Overview
3. Level II Self-Evaluation and Review
4. Professional Thermographer – The Process of Learning Explained
 - a. Learn the concepts and details behind Bloom’s Cognitive Levels.
 - b. Understand the work requirements for licensed professionals.
 - c. Review the ASNT-SNT-TC-1A, BINDT, ISO 18346 hour requirements for Level I, II and III infrared thermography.
 - d. Understand the concept of a Professional Thermographer.
5. Critical Thinking
 - a. Explore several critical thinking skills and discuss how these apply to infrared thermography:
 - i. Evidence through reality.
 - ii. Context skills to isolate the problem from context.
 - iii. Relevant criteria for making the judgment well.
 - iv. Applicable methods or techniques for forming the judgment.
 - v. Applicable theoretical constructs for understanding the problem and the question at hand.
6. Principles and Theory in Heat Transfer
 - a. Understand intermediate and advanced concepts of conduction, convection and radiation heat transfer as they apply to infrared thermography applications.
 - b. Understand temperature measurement principles and challenges.
 - c. Learn the Arrhenius equation and be able to recognize it as a failure mechanism warning signal.
 - d. Gain a better understanding of the relationship between emissivity and reflected temperature as it applies to measurements.
 - e. Learn additional factors on why components fail.
 - f. Understand additional concepts of latent heat.
 - g. Be able to recognize transition points on the latent heat curve.
7. Infrared Camera Principles and Measurement Techniques
 - a. Discuss various image analysis techniques such as thermal tuning, palette selection, and color alarms that can help with diagnosing problems and identifying potential anomalies in an image.
 - b. Review the various infrared detector designs, how they function, and the advantages/disadvantages of each.
 - c. Discuss camera calibration and which parameters are compensated for by the cameras.
8. Procedure and Program Development
 - a. Identify the steps necessary for the creation of a standard work instruction or written procedure.
 - b. Choose between work instructions and written procedures as appropriate to the task.
 - c. Create a list of criteria to judge the effectiveness of a work instruction or written procedure.
 - d. Learn the essential elements of an infrared inspection program.
9. Safety
 - a. Review basic safety practices for using an infrared camera while performing an inspection.
 - b. Identify jobsite safety hazards.
 - c. Discuss the importance of safety in several applications.
 - d. Review organizations that define safety regulations.
 - e. Discuss potential hazards for the client and their organization.

SYLLABUS

Time	Day 1	Day 2	Day 3	Day 4		
0800 – 0830	Introduction/Course Overview	Principles & Theory in Heat Transfer Workbook - Lab	Camera Principles & Measurement Techniques	Procedure & Program Development		
0830 – 0900						
0900 – 0930	Goals & Certification			Safety		
0930 – 1000						
1000 – 1030	Level III Diagnostic Test				Exam Review	
1030 – 1100						
1100 – 1130	Master Thermographer			Lunch	Lunch	Lunch
1130 – 1200						
1200 – 1230	Lunch	Lunch	Lunch	Lunch		
1230 – 1300						
1300 – 1330	Master Thermographer continued	Workbook – Heat Transfer Labs	Procedure Writing	Exam & Course Conclusion		
1330 – 1400						
1400 – 1430	Critical Thinking		Workbook			
1430 – 1500						
1500 – 1530						
1530 – 1600						
1600 – 1630						
1630 – 1700						