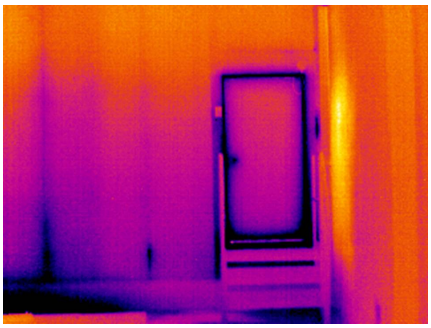
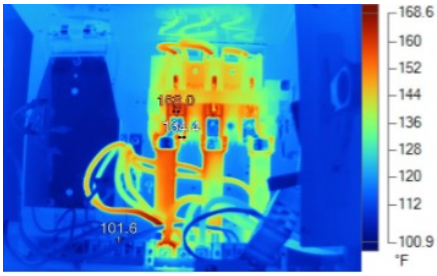
Level I Infrared Thermography Applications with Operational Readiness Training for Thermal Imagers

Infrared thermal imaging provides a means for perceiving the physical world in useful ways across a wide range of applications. Level I training with Operational Readiness Training provides the fundamental information and classroom experience necessary to prepare the student for applying infrared thermography in their work and to their applications—including familiarization with workflow for analyzing images and creating reports. This class emphasizes qualitative thermography techniques and how to collect data following proven and published inspection procedures.

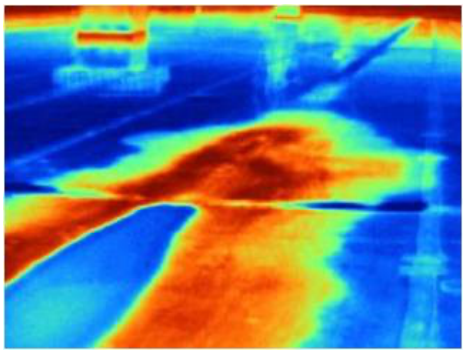


The overall goal for the course is to build expertise and confidence in using infrared thermal imagers, so they become like a 6th sense: *thermal vision*. To achieve that end, this 36-hour training course employs a combination of lectures, demonstrations, hands-on lab experiments, and quizzes and discussions to test understanding. The training concludes with an overall course review and examinations.



One of the aims of Level I training is to prepare the student to be successful with making measurements and to help them understand the capabilities and limitations of their infrared thermography tools and knowledge. The course covers basic heat transfer theory and the theory and applications of infrared thermography including building envelope and roofs, condition inspection of electrical and mechanical equipment, and non-destructive testing of materials. Students are challenged daily with hands on demonstrations, experiments, and inspection situations like those they will experience in their work. Upon completion, students will be able to capture clear thermograms and make basic inferences and diagnosis.

This course fully meets the educational requirements for certification according to the published recommendations of ASNT. The course may also be eligible for Continuing Education Unit (CEU) credit. Please contact Fox River Systems with your CEU requirements and applicable agency contacts so that we can apply and request our training classes be eligible for CEU credit.



The course is open to everyone regardless of whether or not they own a thermal imager. Attendees that do have equipment are encouraged to bring their thermal imagers and laptop PCs as there are a number of hands-on learning opportunities available during the week.

Note: Please refer to the Operational Readiness Training outline (publication ORT-SEM) for syllabus and additional details regarding this training component.

Part Number/Description	
FRS-LEVEL1-IRT+ORT Level 1 Thermographic Applications + Operational Readiness Training for Thermal Imagers 36-hour class, printed training materials, and examinations *See course outline and general schedule on reverse of this brochure.*	

For questions about our current public course schedule or on-site training, ordering assistance, or cancellation/refund policy, please contact:

Fox River Systems, Inc.
830 W State Route 22, #328
Lake Zurich, IL 60047 USA

Tel. (630) 365-4030

www.FoxRiverSystems.com

Pub: FRS-LEVEL1IRT+ORT 2024-02

Level 1 Infrared Thermography Applications with Operational Readiness Training

Part I: Course Intro + Operational Training

- Introductions and course overview
- Keynote presentation: Engaging Your 6th Sense
- Operational readiness training for thermal Fluke and FLIR infrared thermal imagers
- Thermal imager menu navigation & settings
- Hands-on instruction and practice
- Introduction to Fluke and FLIR software tools for thermal image analysis and reporting

Part II: Heat Science

- Temperature and Heat
- Heat transfer methods: conduction, convection, and radiation
- Material density, specific heat, thermal capacitance, and state change
- Hands-on equipment use: instruction and practice

Part III: Thermal Sensors & Optics

- Radiation theory and basic of radiometric temperature measurement
- Temperature calibration ranges
- Field of View (FOV), Instantaneous FOV

Part IV: Application Modules

For each application module, the following items will be addressed:

- Examples of assets/equipment to be inspected
- Overview of inspection standards and practices
- Conditions for successful inspection
- Thermal patterns/signatures and causes
- Safety considerations
- Workflows and automation: methods of inspection, data collection, analysis, and reporting

Module A) Electrical Distribution Equipment

- Transformers, switchboards, panels, MCCs, fuses and breakers, conductors, termination points
- Electrical safety considerations

Module B) Mechanical Systems Applications

- Motors, transmission components, and driven loads

Module C) Process Systems Applications

- Tanks, fluid flow, underground piping
- Boilers, steam and condensate lines, steam traps
- Refractory insulation

Module D) Building Envelope Applications

- Insulation performance, air infiltration, and moisture intrusion in walls, floors, and ceilings

Module E) Low Sloped Roofs

- Roof membranes, insulation, and roof decking

Part V: Thermography Program Management

- Certification
- Working practices

Part VI: Course Examinations

- Course wrap-up and review
- Course examinations

CERTIFICATION:

Students are only required to take the general exam to successfully complete the course. Alternatively, students will have the opportunity to take a three-part certification examination consisting of two written portions and a practical where you must show proficiency with your infrared camera. The 40 question general exam will evaluate your general knowledge in infrared theory and mainstream applications. The specific exam will be based on accepted ASTM, ISO, NFPA, NETA, IEEE, OSHA, EPRI, and BINDT methodologies. The practical exam will allow you to prove you have the skills necessary to perform testing in the field.

In the absence of having written procedures, each student will be offered a summary of the applicable standards that applies to your work. You will also be offered a sample Written Practice, a suggested guideline on how to organize and manage a certification program for your company. It is a straightforward document and process to set up a program, but it has critical importance in describing the educational experience and testing requirements for certification for your organization. As part of the course fee, we will help you put a meaningful and effective written practice in place.

	MON	TUE	WED	THU	FRI
8am 12pm	Operational Readiness Training for Thermal Imagers (4 hours)	Fox River Systems Level 1 Infrared Thermography Training (Day 2: 8 hours)	Fox River Systems Level 1 Infrared Thermography Training (Day 3: 8 hours)	Fox River Systems Level 1 Infrared Thermography Training (Day 4: 8 hours)	Fox River Systems Level 1 Infrared Thermography Training (Day 4: 4 hours) ----------
BREAK					
1pm	Fox River Systems Level 1 Infrared Thermography Training				

5pm	(4 hours)				