

IRT CAT-I INFRARED THERMOGRAPHY ISO 18436-7 CATEGORY I

COURSE OVERVIEW

This course will prepare you for life as an Infrared Thermographer. You will learn the fundamentals of infrared energy and the camera, and you will learn about the most common applications.

With the assistance of the Mobius Institute interactive simulations, 3D animations, and case studies, you will not require a great memory to learn all the facts and concepts. As a result, you will understand the 'science' of infrared thermography. You will understand how the camera functions and learn about plant equipment's mechanical and electrical failure modes so that you can accurately and confidently detect and diagnose a wide range of fault conditions. You will come away from the course with the knowledge and confidence to be successful as an infrared thermographer.

Once you complete the training you will be eligible to take the exam to become certified by the internationally renowned Mobius Institute Board of Certification [MIBoc] to ISO 18436-7 Category I. To be certified you will need to achieve a minimum score of 75% of the 50 questions and complete the Ishihara colour perception test. The MIBoc certification is one of the only international programs accredited to ISO/ IEC 17024 – there is no higher standard in condition monitoring

IRT CAT-I CANDIDATE PROFILE

This course is intended for the infrared thermographer who will:

- Set up and operate the thermal imaging equipment for safe thermographic data collection
- Verify the calibration of thermographic measurement systems
- Identify, prevent minimize and control poor data acquisition and error sources
- Apply a specified thermographic measurement technique
- Evaluate and report test results and highlight areas of concern

- Maintenance practices
 - Reactive, preventive, condition-based, proactive
 - How to decide between them
- Condition monitoring
 - Why it works
 - Vibration, ultrasound, oil analysis, wear particle analysis, and electric motor testing
 - Detecting faults, root causes, and quality control
- Principles of infrared thermography
 - Understanding the difference between heat energy and temperature
 - The laws of thermodynamics
 - Heat transfer modes – conduction, convection and radiation
 - The thermal capacity of different materials
- Thermal conduction
 - The fundamentals of conduction
 - Conductive heat transfer rate
 - Thermal conductivity of different materials
- Thermal convection
 - The fundamentals of convection
 - Compensating for the “wind cooling effect”
- Thermal radiation
 - The fundamentals of radiation
 - Emitted, reflected and transmitted radiation
 - Radiation wavelengths and the electromagnetic spectrum
 - Emissivity and the Stefan-Boltzmann Law
 - Incident and exitant radiation
- Equipment and data acquisition
 - Understanding the infrared camera
 - Lenses and lens materials
 - Capturing and controlling the image with temperature range, level and span
 - Color palette selection
 - Error source recognition, prevention and control
 - Calibrating the thermal camera
 - Environmental and operational conditions
 - Image storage and management
- Safety rules and guidelines
 - Hazard awareness
 - Standards and guides
 - Personal Protective Equipment (PPE)
- Thermographic applications
 - The basic principles of diagnostics (ISO 13379) and prognostics (ISO 13381)
 - Machinery engineering principles
 - Electrical application – fuses, transformers, switchgear, transmission lines etc
 - Mechanical application – pipes, tanks, refractories, heat exchangers etc
 - Civil applications – windows, air leaks, construction integrity etc
 - Process applications – steam traps
- General image interpretation guidelines
 - Image processing
 - Fault classification
- Report generation
 - Providing actionable information



USD 2,000 per person

Printed course manuals & Exam fee included

1.868.274.4716

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BENEFITS

You will learn...

- Why we perform condition monitoring
- How to decide between reactive, preventive, condition-based, and proactive maintenance
- Vibration Analysis, Ultrasound Analysis, Oil Analysis, Wear Particle Analysis, and Electric Motor Testing
- All about heat vs. temperature and temperature scales
- The laws of thermodynamics
- How thermal conductivity occurs in different materials
- The difference between thermal conductivity and specific heat capacity
- Real-life examples of conductive heat transfer
- Convective heat transfer
- How wind will affect the results you achieve
- Radiant heat transfer
- How your infrared camera works and the functionality to perform inspections
- How to acquire data and process images
- “Thermal tuning.”
- How to determine emissivity
- How to identify and deal with reflections
- How to acquire data and store images
- The basic principles of diagnostics and prognostics
- The relationship between CBM, diagnostics, and prognostics
- The different thermal signatures of heat generation
- The concept of “comparative temperature measurements.”
- How to distinguish between active and passive thermography

FAST FACTS

Compliance:

- Training and certification: ISO 18436-7
- Certification: ISO 18436-1, ISO/IEC 17024
- Training: ISO 18436-3

Exam:

- Two hours
- 50 multiple-choice questions
- 70% passing grade
- Can be taken online

Certification requirements:

- Training course completed
- 12-months of work experience, verified by an independent person
- Pass the Ishihara color perception test
- Valid for 5 years

Pre-study:

- Access to the “Learning Zone” upon registration and payment
- Complete set of videos covering every topic
- An excellent way to be prepared and get the most from the course



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