



# IRT CAT I

## ISO 18436-7 Category I IRT CAT-I INFRARED THERMOGRAPHY

### Distance Learning (Online) Training

This course prepares you to either use Infrared Thermography or be confident to understand how it can be used by others in a preventive maintenance program.

- 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 a wealth of 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 or understand its applications.

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### Detailed topic list:

#### 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 excitant radiation

#### Equipment and data acquisition

- Understanding the infrared camera Lenses and lens materials
- Capturing and controlling the image with temperature range, level and span
- Colour 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

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### WHY IS ACCREDITED CERTIFICATION IMPORTANT?

- Accredited certification is a world recognised certification that is respected within the industry. The exams are not necessarily harder, but the process is far more 'robust'. If you want to be able hold your head high knowing that you meet the highest international standards that every employer instantly recognizes, then you must be certified by the Mobius Institute Board of Certification [MIBoC].
- The accreditation process, administered by Government appointed agencies such as ANSI, UKAS, and JASANZ, conduct regular audits to ensure the certification process is fair and independent. The audits are given to check that the certification body continues to meet the international standards: ISO 18436-7, ISO 18436-1, ISO 18436-3, and ISO/IEC 17024. They check that we continuously follow these processes and that an effective quality control process is in place to ensure that we continue to adhere to the standards governed by ISO.

### WHY SHOULD I BE TRAINED IN THE FIELD OF INFRARED THERMOGRAPHY?

- On the face of it, infrared thermography 'looks easy'. Point the camera, look for hot spots, and order the maintenance. But nothing could be further from the truth. It is a classic case that many people don't know what they don't know. The science behind infrared thermography, the failure modes you are attempting to detect, and the cameras themselves are all very complex.
- If you do not master all three areas your program will not only lose all credibility (missed faults and unnecessary work orders), but you will put your own safety, and the safety of your co-workers and the viability of the plant at risk.

### CAN I SKIP THE TRAINING COURSE AND GO DIRECTLY TO THE EXAM?

- No, you must complete training to meet the certification requirements. Training must be from a MIBoC approved IRT training provider.

### MAY I TAKE THE COURSES IF I AM NOT INTERESTED IN BECOMING CERTIFIED OR IF I HAVE INSUFFICIENT EXPERIENCE FOR CERTIFICATION?

- Yes. The course is open to the anyone that wishes to improve their knowledge. If you are involved in Infrared Thermography in any capacity, such as sales, marketing, engineering, design, or reliability, you will come away with a far better understanding of how machines are monitored, how faults develop, and what can be done to determine what faults actually exist in a machine. All attendees receive certificates of training completion.

### AFTER I TAKE THE EXAM, WHEN WILL I RECEIVE NOTIFICATIONS AS TO WHETHER I PASSED, AND WHEN WILL I RECEIVE MY CERTIFICATE?

- You will receive notification of your results 5-10 days after the exam has been received at our Australian office. If you have passed the exam and met all certification requirements, you will receive your digital certificate 10-15 days after your exam results notification email.

### HOW LONG IS THE CERTIFICATION VALID?

- Certification is valid for five (5) years.

### HOW DO I RENEW MY CERTIFICATION?

- Mobius will endeavour to contact you before your certification expires, therefore it is important that you keep your student profile in our TMS system up to date (TMS is the training management system you will use to register for the course and for certification). We recommend a best practice of utilizing a personal email address for certification communications, in case of a job change. Access your TMS account [here](#).

### WHAT ARE THE EXPERIENCE REQUIREMENTS FOR IRT CAT-I?

- You must have 12-months of hands-on work experience with Thermography and associated condition monitoring tasks. You will be asked to nominate an independent supervisor or manager who can verify that you have the required experience.

### WHAT IS THE COLOR PERCEPTION TEST?

- MIBoC uses the Ishihara Colour Perception Test, also known as the colour vision test, to measure a person's ability to tell the difference between colours. Ishihara test checks for red-green colour blindness.
- In an Ishihara test, a person looks at a series of circles (known as Ishihara plates) with dots of different colours and sizes. A person who has trouble seeing red and green will find the shapes and numbers hard to see or may not see them at all.

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### Distance Learning (on-line) Course Format:

The course is made up of videos of short studio recordings, totaling 32 hours, presented by Jason Tranter, the nenowned Mobius CEO and founder.

It is very comprehensive and informative, with audio commentary and animated visual slides. A colour bound printed course manual is provided to follow the course and study offline.

Students can choose either **4 months study access** or **Life-Time access** (with no expiry date). For both options, students can watch the videos more than once.

### Certification Exam:

The certification exam can be taken remotely with supervision of an approved invigilator. The exam is 2 hours, closed-book with 50 multiple choice questions.

### IRT CAT I Certification requires:

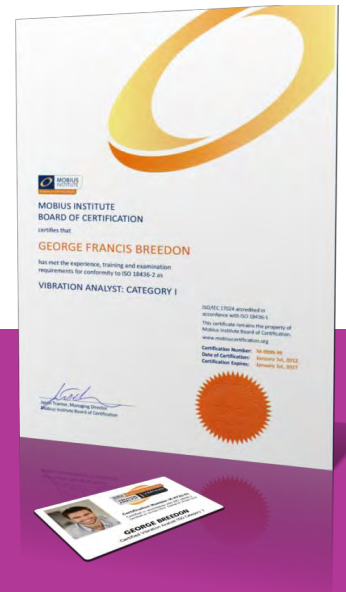
1. Prerequisite of a minimum of 12 month's verified work experience
2. Completing the whole course on-line
3. Passing the exam with a minimum of 75%
4. Pass the Ishihara colour perception test

## Highly credentialed certification

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. The MIBoC certification is one of the few international programs accredited to ISO/IEC 17024 – there is no higher standard in condition monitoring certification.

**All MIBoC certified reliability practitioners receive personalized logos with their certification number and name for their own professional use. Mobius Institute also maintains a listing of all certified analysts on their website and provides each person with a certification confirmation webpage.**

For more information about Mobius Institute's accreditation, please visit [www.mobiusinstitute.com/certification](http://www.mobiusinstitute.com/certification).



To enquire about this or other Distance Learning or Classroom training options.

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**Authorized Mobius Reliability Training Partner for Australia & New Zealand**