



LEARNING
FOR PREDICTIVE MAINTENANCE TECHNOLOGIES

LEVEL 1 VIBRATION ANALYSIS

PRACTICAL TRAINING FOR REAL WORLD ULTRASOUND INSPECTORS

WHY CHOOSE IPI LEARNING?

IPI Learning trains employees of large international corporations and standalone operators in cities across multiple countries. We provide the most comprehensive and progressive predictive maintenance training in the world. As a one stop training centre for predictive maintenance technologies, IPI Learning course subjects include:



Infrared
Thermography



Infrared Windows
& Electrical Safety



Condition
Monitoring



Vibration



Alignment



Airborne Ultrasound

“ Our training courses are designed to provide you with the skills you need to perform your surveys with confidence, competence and most importantly, results. ”

Brenton Ward, IPI Learning Trainer

IPI Learning has been providing **expert predictive maintenance** services for almost 20 years.

- ✓ Training
- ✓ Sales support
- ✓ Professional consultancy to industry

Our Trainers have decades of **real world experience** and are qualified in training & assessment (TAE 40110) in Australia.





LEVEL 1 VIBRATION ANALYSIS

The Level 1 Vibration Analysis ISO Cat 1 course is intended for personnel who are new to vibration monitoring and analysis.

Course overview

The course focuses on periodic, single channel data collection and analysis for condition based maintenance programmes. A foundation is established for in-depth understanding of spectrum and waveform relationships

Who should apply?

If you have been performing vibration analysis for less than one year, or if you have been collecting vibration readings and leaving analysis to another person, then this is course is for you. This course is also designed for reliability engineers, PdM program managers, and other maintenance staff who would like to understand condition monitoring with a focus on vibration analysis

What will you learn?

- Maintenance practices
- Principles of vibration
- Data acquisition
- Equipment knowledge
- Basic vibration analysis
- Vibration analysis
- Fault diagnosis program

Inclusions (Fees)

Course tuition includes all course presentations and reference materials and an informal exam. The certification exam incurs an additional cost.

Learning outcomes

This course will give you a solid understanding of:

- Benefits of performing condition monitoring and improving reliability
- Condition Monitoring Technologies: acoustic emission, infrared thermography, oil analysis, wear debris analysis, electric motor testing
- How machines work – via supplementary self-study using the "Equipment Knowledge" section
- Why vibration measurements can tell you about the condition of the machine
- How to collect good, repeatable measurements
- How to analyse vibration spectra, and the basics of fault diagnosis: unbalance, misalignment, looseness, rolling element bearings faults, resonance, and other conditions.
- Introduction to setting alarm limits

Student support



Comprehensive websites

infraredtraining.com.au
cita.org.au



Onsite consulting & mentoring

Program setup
Program audits
Onsite training and mentoring



Free advice from expert thermographers

Email training@infraredtraining.com.au
Web forum cita.org.au

TYPES OF TRAINING



Classroom Learning

Undertake your training in a classroom setting dedicated to your learning.

- Freedom from the constant distractions of the office
- Opportunity to meet with other professionals from around the world
- Ability to test drive several types of infrared cameras

Open enrolment courses are regularly held in Melbourne and at other locations throughout Australia.

LEVEL 1 VIBRATION ANALYSIS

Certification & Recognition



MOBIUS INSTITUTE BOARD OF CERTIFICATION

The training course strictly follows ISO 18436-2 and 18436-3. The optional Certification Exam is provided by Mobius Institute Board of Certification, which is ISO/IEC 17024 accredited in accordance with ISO 18436-1 and ISO 18436-2.

Students who meet the experience requirements, complete the course and pass the examination will become certified according to ISO 18436-1 and ISO 18436-2. MOBIUS Institute provides the highest recognised certification available anywhere according to ISO 18436-1 and ISO 18436-2, providing the highest recognised certification available anywhere.

Course name	Level 1 Vibration Analysis
Course code	VIB1
Entry requirements	None
Study mode	Classroom Learning
Duration	3.5 Days Day 1 8.00am – 4.30pm Day 2 8.00am – 4.30pm Day 3 8.00am – 4.30pm Day 4 8.00am – 1.00pm *Approximate completion time
Locations*	Melbourne, Sydney, Brisbane, Perth *Note that this course is not held at our regular training locations. Course venue will be confirmed on registration.
Assessment	Written exam, Practical assessment



LEVEL 1 VIBRATION ANALYSIS COURSE OUTLINE

1

Maintenance practices

- Breakdown, preventive, predictive and RCM
- Condition monitoring
- Review of condition monitoring technologies: Vibration, oil, wear debris analysis, infrared thermography, ultrasonic acoustic emission, electric motor testing

2

Principles of vibration

- Motion, r.m.s./peak/peak-peak, frequency/period
- Displacement, velocity and acceleration
- Units and unit conversion
- Waveform and spectrum (FFT)
- Natural frequencies
- Basic forcing frequency calculations

3

Basic vibration analysis

- Overall level measurements
- Spectrum analysis:
 - Harmonics, sidebands and the analysis process
 - Alarm limits, trending and exception reports

4

Data acquisition

- Instrumentation
- Transducers and transducer mounting
- Measurement point naming conventions
- Routes/surveys: Loading and unloading the route
- Data collection
 - ▶ Following a route
 - ▶ Repeatable data collection
 - ▶ Test procedures
 - ▶ Observations: utilising your time effectively in the field
 - ▶ Recognising bad data

5

Equipment knowledge

- Rotating equipment types and applications
- Rolling element bearings and journal bearings
- Review of failure modes and appropriate use of condition monitoring technologies

6

Fault diagnosis

- Imbalance, misalignment, looseness, eccentricity, resonance
- Defects associated with bearings, gears, belts, electric motors



LEVEL 1 VIBRATION ANALYSIS

To register and see our course schedule visit:

infraredtraining.com.au

Register directly on the training website or complete the registration form included in this information pack and return it by email to:
training@infraredtraining.com.au

For further information

or to find out about our course schedules and locations please contact us.

Melbourne

12/634-644 Mitcham Rd Vermont VIC 3133

Phone: 1300 781 701 (Australia)

1-909-547-3300 (USA)

+61 3 9872 5055 (International)

Email: training@infraredtraining.com.au

Web: infraredtraining.com.au

  @ipilearning



LEARNING
FOR PREDICTIVE MAINTENANCE TECHNOLOGIES