LEVEL 2
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.
Entry criteria

A minimum of six months experience performing vibration analysis and a good understanding of the fundamentals. Level 1 Vibration Analysis training is highly recommended. Note that 18 months experience is required in order to become certified.

Inclusions (Fees)

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

Student support

Comprehensive websites
infraredtraining.com.au
www.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

Course overview

The Vibration Analysis Level 2 course is intended for personnel who have at least 12 months vibration analysis experience and who need to be able to take good data (and decide how the data collector should be set up); analyse a range of fault conditions; and understand balancing and alignment.

Who should apply?

If you have been performing vibration analysis for more than six months and feel that you have a good understanding of the fundamentals, then you are ready to step up to the Category II course. (Note that 18 months experience is required to be certified). Anyone who wants to be capable of confidently diagnosing a wide range of fault conditions, correcting certain conditions, and taking accurate measurements, needs to take this course.

What will you learn?

• Review of maintenance practices
• Review of condition monitoring technologies
• Principles of vibration
• Data acquisition
• Signal processing
• Vibration analysis
• Detailed fault analysis
• Equipment testing and diagnostics
• Corrective action
• Successful condition monitoring program
• Acceptance testing and ISO standards

The Level 2 Vibration Analysis ISO Cat 2 course provides a comprehensive study of machinery faults and their associated spectrum, time waveform and phase characteristics. Additional topics covered include: signal processing, data collection, and corrective active actions.
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.
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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.

<table>
<thead>
<tr>
<th>Course name</th>
<th>Level 2 Vibration Analysis</th>
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<tbody>
<tr>
<td>Course code</td>
<td>VIB2</td>
</tr>
<tr>
<td>Entry requirements</td>
<td>Minimum 6 months experience 18 months experience is required to be certified</td>
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<tr>
<td>Study mode</td>
<td>Classroom Learning</td>
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<tr>
<td>Course length &amp; times</td>
<td>4.5 Days  Day 1 8.00am – 4.30pm  Day 2 8.00am – 4.30pm  Day 3 8.00am – 4.30pm  Day 4 8.00am – 4.30pm  Day 5 8.00am – 1.00pm  Approximate completion time</td>
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<tr>
<td>Locations*</td>
<td>Melbourne, Sydney, Brisbane, Perth  Note that this course is not held at our regular training locations. Course venue will be confirmed on registration.</td>
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<tr>
<td>Assessment</td>
<td>Written exam, Practical assessment</td>
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COURSE OUTLINE

1. Review of maintenance practices
2. Review of condition monitoring technologies
3. Data acquisition
   • Transducer types, selection, and mounting
   • Measurement point selection
   • Following routes, test planning, measurement errors
4. Vibration analysis
   • Spectrum analysis methodology
   • Introduction to timewaveform, phase and orbit analysis
   • Enveloping, shock pulse, spike energy, Peak Vue
5. Signal processing
   • Filters, sampling, aliasing, dynamic range, windowing
   • Resolution, Fmax, data collection time, averaging
6. Detailed fault analysis
   • Natural frequencies and resonances
   • Imbalance, eccentricity and bent shaft
   • Misalignment, cocked bearing and soft foot
   • Mechanical looseness
   • Rolling element bearing analysis
   • Analysis of induction motors, gears, belts, pumps, compressors and fans
   • Lots of case studies and exercises for participants
7. Equipment testing and diagnostics
   • Impact testing (bump tests)
   • Phase analysis
Key learning outcomes

This course will give you a solid understanding of:

- Well designed program and the reliability centered maintenance approach (with precision balancing, alignment, lubrication and resonance control) will improve the OEE and therefore the bottom line.

- 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.

- Select the correct measurement location and axis, and collect good, repeatable measurements.

- What the Fmax, resolution, averaging and other analyser setting mean, and how to select the optimum settings for a wide variety of machine types.

- Analyse vibration spectra, time waveforms, envelope and phase measurements.

- Diagnose a range of fault conditions such as: unbalance, eccentricity, misalignment, bent shaft, cocked bearings, looseness, rolling element bearings faults, journal bearing faults, gearbox faults, resonance, and other conditions.

- How to set alarm limits manually and with statistics.

- How to balance and align a machine, and correct a resonance condition.
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For further information
or to find out about our course schedules and locations please contact us.

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

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