

Vibration Analysis ISO 18436-2

TRAINING AND CERTIFICATION

Vibration Analysis Category I

Vibration Analysis Category II

Vibration Analysis Category III

Vibration Analysis Category IV



www.mobiusinstitute.com

LEARN THE MOBIUS WAY

WHY LEARN WITH MOBIUS INSTITUTE™?

There are many reasons why over 8,000+ students choose Mobius Institute every year, and why you should, choose Mobius Institute for your vibration training and certification

- We make complex topics simple with amazing 3D animations and simulations that make you say, "Ah, now I get it!"
- We give you access to the entire course before the class begins so you are better prepared, and for six months after the course, just in case you still have questions.
- We use anonymous, stress-free polling throughout the course, so you know whether you truly understand each topic, and the instructor knows when to move on to the next topic - no student is left behind.



www.mobiusinstitute.com



WITH MOBIUS INSTITUTE™, YOU CAN *LEARN YOUR WAY.*

We offer the ultimate flexibility. See the course details for more information.



CLASSROOM INSTRUCTOR-LED COURSES

We have 200+ Training Partners in 115+ countries, offering 29+ languages.



VIRTUAL INSTRUCTOR-LED COURSES

Attend a virtual course - just like a live course, but you learn via GoToMeeting.



PRIVATE ON-SITE INSTRUCTOR-LED COURSES

Have the instructor come to your site to save your precious time and money.



ONLINE VIDEO COURSES

Traditional eLearning courses and iLearnReliability Learning Management System (LMS) courses

WHY BECOME CERTIFIED BY THE MOBIUS INSTITUTE BOARD OF CERTIFICATION™?



There are so many benefits to becoming certified:

- You should be recognized for your achievements; not everyone is up to the challenge of understanding vibration analysis, let alone successfully collecting data and utilizing it
- Being certified by an accredited certification organization is a major step up from simply passing a test. Yes, the process is a little more complicated and stricter, but that is for very good reasons
- The educational process is extremely valuable, but being certified tells an employer (or a consulting client) that you are capable of doing an important job

Mobius Institute has certified more vibration analysts than any other organization, and we have only been offering certification since 2005. Almost 65,000+ vibration analysts around the world, just like you, chose Mobius Institute.

You will receive a digitally encrypted certificate, an ID card, and a personalized logo that you should use in email signatures and elsewhere that you want people to know about your achievements.



VCAT-II Intermediate Vibration Analyst

ISO 18436-2 Category II

Learn to be an effective vibration analyst - capable of diagnosing a wide range of faults, conducting special tests, and performing precision aligning and balancing machinery - with advanced 3D animations and interactive simulations that make everything easy to understand.

So, you are ready to take the next step in your vibration analysis career. The good news is you are in the right place. Our VCAT-II ISO Category II course teaches you what you need to know to be a successful, confident, and competent vibration analyst.

We will teach you how to diagnose a wide range of fault conditions. We will teach you how to collect the right data with the correct vibration analyzer settings. And we will teach you some useful tips and tricks so that you may validate the diagnoses that you make. In addition, we will teach you about shaft alignment and balancing so that you can improve the reliability of the equipment.

Once you complete the training, you can take the exam with confidence, and become certified to ISO 18436-2 Category II via the internationally respected Mobius Institute Board of Certification [MIBoC]. The MIBoC certification is accredited to ISO/IEC 17024 - there is no higher standard. You will join thousands of other Mobius certified analysts around the world.

VCAT-II CANDIDATE PROFILE

This course is intended for the vibration analyst who will:

- Collect vibration data
- Validate that the data is good
- Set up the analyzer for routine data collection and special tests
- Diagnose most of the common fault conditions
- Perform special tests to validate unbalance, misalignment, resonance, looseness, and other conditions
- Know how to perform precision shaft alignment and balancing
- Use the training and certification as the next step in a rewarding career as a vibration analyst



WHAT WILL YOU GAIN FROM TAKING THIS COURSE?

There is a great deal to learn, but it will help you to perform your role with confidence. In this course you will:

- Increase your knowledge on maintenance practices, condition monitoring, and the common condition monitoring technologies
- Increase your knowledge about data collection, testing techniques, sensor types, and so on
- Learn a great deal about signal processing and the settings of your vibration analyzer
- Increase your knowledge of spectrum analysis, time waveform analysis, and phase analysis
- Understand why phase analysis and time waveform analysis are both critical tools used by the vibration analyst
- Learn about common failure modes and how to detect them, including unbalance, misalignment, looseness, resonance, pump/fan/compressor vane, and flow issues, cavitation, turbulence, gearbox failures, rolling element bearing failure, and more
- Learn about high-frequency bearing and gear fault detection techniques: demodulation, enveloping, SPM HD, shock pulse, PeakVue, Spike Energy, and others
- Be able to use spectra, phase readings, time waveforms, bump and impact tests, to test for looseness, resonance, and other conditions
- Learn about precision shaft alignment and soft foot correction
- Learn about single and two-plane balancing
- Learn the basics of setting alarm limits: band alarms, and mask/envelope alarms

The key is that with the VCAT-II course, you will transition from being a person who is primarily capable of collecting data to a person who can diagnose faults on the critical machinery, and in some cases, prevent or correct them.

VCAT II FAST FACTS

Duration:

38 hours, typically over five days

Format:

- Live public course
- On-site course
- Virtual online course
- Video distance learning online courses and Life Long Learning (LLL)

Compliance:

- Training and certification: ISO 18436-2
- Certification: ISO 18436-1, ISO/IEC 17024
- Training: ISO 18436-3

Exam:

- Three hours
- 100 multiple-choice questions
- 70% passing grade
- Can be taken online or in-person at the course

Certification requirements:

- Training course completed
- 18-months of vibration analysis experience, verified by an independent person
- Pass the exam
- 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

Post-study:

- Continue to access the Learning Zone for 4-months after the course or upgrade your access for a lifetime with Life Long Learning (LLL).
- Continue learning, without charge, on MOBIUS CONNECT® via WWW.MOBIUSCONNECT.COM





TOPICS COVERED – INTERMEDIATE ANALYST CATEGORY II

- Review of maintenance practices
- Review of condition monitoring technologies
- Principles of vibration
 - Complete review of basics
 - Waveform, spectrum (FFT), phase and orbits
 - Understanding signals: modulation, beating, sum/difference
- Data acquisition
 - Transducer types: Non-contact displacement
- Proximity probes, velocity sensors, and accelerometers
 - Transducer selection
 - Transducer mounting and natural frequency
 - Measurement point selection
 - Following routes, and test planning
 - Common measurement errors
- Signal processing
 - Filters: Low pass, band pass, high pass, band stop
 - Sampling, aliasing, dynamic range
 - Resolution, Fmax, data collection time
 - Averaging: linear, overlap, peak hold, time synchronous
 - Windowing and leakage
- Vibration analysis
 - Spectrum analysis
 - Time waveform analysis (introduction)
 - Orbit analysis (introduction)
 - Phase analysis: bubble diagrams and ODS
 - Enveloping (demodulation), shock pulse, spike energy, PeakVue
- 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
 - Analysis of gears
 - Analysis of belt-driven machines
 - Analysis of pumps, compressors, and fans
- Equipment testing and diagnostics
 - Impact testing and bump tests
 - Phase analysis
- Corrective action
 - General maintenance repair activities
 - Review of the balancing process
 - Review of shaft alignment procedures

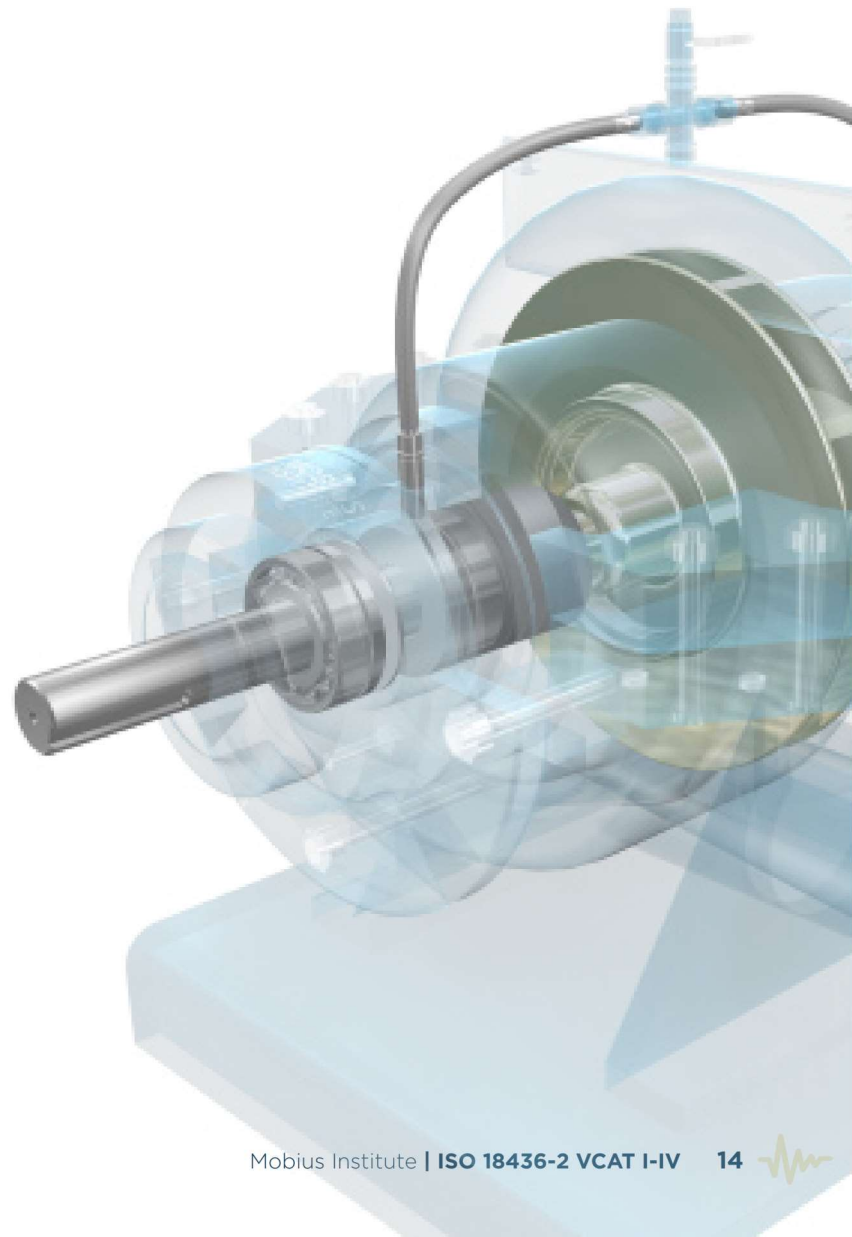
CONTINUED NEXT PAGE...



TOPICS COVERED – INTERMEDIATE ANALYST CATEGORY II

(continued)

- Running a successful condition monitoring program
 - Setting baselines
 - Setting alarms: band, envelope/mask, statistical
 - Setting goals and expectations (avoiding common problems)
 - Report generation
 - Reporting success stories
- Acceptance testing
- Review of ISO standards





➤ **WILL I RECEIVE PRE-COURSE STUDY MATERIALS?**

Every registered student will receive an instructional email to finalize their course registration. They will also receive a link to their personal Learning Zone account. The account provides a digital version of the coursebook and also a series of folders containing movies. These movies are actual course videos, recorded in a studio, and contain the same content taught in the Instructor-led course the student is registered in. The Learning Zone account may be used for pre-course study materials, review during the course week, reference after the course, or used to re-take the course and re-sit your certification exam. The account is activated at the time the student registers for the course and expires 6 months after the close date of the course they will be attending.

➤ **MAY I TAKE ONE OF YOUR COURSES IF I AM NOT INTERESTED IN BECOMING CERTIFIED OR IF I HAVE INSUFFICIENT EXPERIENCE FOR CERTIFICATION?**

Yes, our courses are open to the public, regardless of experience. If you are involved in vibration analysis or rotating machinery 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 completion. Candidates without sufficient experience will still receive a certificate if they pass the exam, but it will note that their experience was insufficient for ISO certification at the time.

➤ **AFTER I ATTEND YOUR COURSE AND 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?**

Vibration analysis certification is valid for five (5) years.

➤ **HOW DO I RENEW MY CERTIFICATION?**

We will endeavor to contact you before your certification expires, therefore it is important that you keep your TMS records 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.



➤ **HOW DO I QUALIFY FOR RENEWAL?**

As per the standard, we do not require you to attend our conferences or take our courses, however, we hope you will take advantage of WWW.MOBIUSCONNECT.COM and the sites linked to MOBIUS CONNECT so that your knowledge remains current. These sites are free of charge. When it is time to renew your certification, we will ask you to nominate an independent person who can verify that you are still active as a vibration analyst. There will be a small fee to renew your digital certificate and to renew your certification status with the accreditation body.

➤ **WHAT ARE THE EXPERIENCE REQUIREMENTS FOR VCAT I?**

You must have six months of experience generally associated with maintenance, reliability, and vibration data collection. You will be asked to nominate an independent person who can verify that you have that experience.

➤ **WHAT ARE THE EXPERIENCE REQUIREMENTS FOR VCAT II?**

You must have 18 months of experience in vibration data collection and analysis. You will be asked to nominate an independent person who can verify that you have that experience.

➤ **WHAT ARE THE EXPERIENCE REQUIREMENTS FOR VCAT III?**

You must have 36 months of experience in vibration data collection and analysis. You will be asked to nominate an independent person who can verify that you have that experience. Certification to VCAT III also requires previous certification to VCAT II by a MIBoC approved certification body.

➤ **WHAT ARE THE EXPERIENCE REQUIREMENTS FOR VCAT IV?**

You must have 60 months of experience in vibration data collection and analysis. You will be asked to nominate an independent person who can verify that you have that experience. Certification to VCAT IV also requires previous certification to VCAT III by a MIBoC approved certification body.



Mobius Institute Board of Certification is an accredited certification body per ISO/IEC 17024 and ISO 18436-1 authorized to provide certification in accordance with ISO 18436-1 and 18436-2.

Mobius Institute Board of Certification (MIBoC) is an impartial and independent entity that is directed by scheme and technical committees to ensure that its certification meets or exceeds the requirements defined by the applicable International Organization for Standardization, ISO 18436 standards.



MOBIUS INSTITUTE is a worldwide provider of reliability improvement, condition monitoring and precision maintenance education to industrial plant managers, reliability engineers, and condition monitoring technicians. Our programs will allow plants to be successful in implementing reliability improvement programs through delivery of more easily understandable and comprehensive training of reliability and vibration analysis via public, in-plant and online education programs.

For more information about additional training courses, software tools, industry terminology and definitions, accredited certification, and specific course details, visit the Mobius Institute website.

www.mobiusinstitute.com

North America: +1 (239) 600 - 6828 | Australia: (+61) (0)3-5977-4606

learn@mobiusinstitute.com

Join thousands of other industry professionals by creating your free custom profile today at WWW.MOBIUSCONNECT.COM

DOWNLOAD THE MOBILE APP  



MOBIUS CONNECT is your gateway to reliability and CBM videos, webinars, articles, tips, and a live feed and forum. You will connect with people, just like you, all over the world.

At MOBIUS CONNECT, you can solve problems, continue learning, and share your experience - all for free!

You must never stop learning.

