

Vibration Analysis ISO 18436-2 Category I-IV

VIBRATION ANALYST TRAINING
& CERTIFICATION



www.mobiusinstitute.com

VCAT-II Vibration Analyst

ISO 18436-2 Category II

Cultivate competency as a vibration analyst - capable of diagnosing a wide range of faults, conducting special tests, and performing alignment and balancing - 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 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 high-frequency bearing and gear fault detection techniques: demodulation, enveloping, 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 precision shaft alignment and soft foot correction
- Learn single and two-plane balancing
- Learn the basics of setting alarm limits: band alarms, and mask/envelope alarms

The key 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 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
- Private on-site course
- Virtual online course
- Video distance learning online courses

Compliance:

- Training: ISO 18436-2
- Certification: ISO 18436-2, ISO/IE 17024

Exam:

- 3 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 practical vibration analysis work experience, verified by supervisor/manager
- Pass the exam
- Valid for 5 years

Pre-study:

- Access to the Learning Zone upon registration and payment. For online distance learning, access to the learning platform four months from 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 accessing the Learning Zone for 4 months after completing your course. Plus, enjoy the option to upgrade to a 1-year Continued Education plan for extended learning
- Continue learning for free on WWW.MOBIUSCONNECT.COM with online forums, webinars, tutorials, etc.





TOPICS COVERED - CATEGORY II

➤ Review of maintenance practices

➤ Review of condition monitoring technologies

➤ Principals 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
- Unbalance, 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 balancing process
- Review of shaft alignment

➤ Setting alarm limits

- Setting baselines
- Setting alarms: band, envelope/mask, statistical

➤ Acceptance testing

➤ Review of relevant ISO standards

