

ISO 18436-2 Category 3 Vibration Analysis

4 Days. Optional 4 hr certification exam on day 5

The category III vibration course meets and exceeds requirements of ISO 18436-2. It is intended for students who have passed Cat II and wish to delve deeper into vibration analysis or manage CM programs.

Overview of Course Contents

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| <ul style="list-style-type: none">• Managing Condition Monitoring• Condition Monitoring Technologies• Principles of Vibration• Data Acquisition• Signal Processing• Fault Analysis• Corrective Action | <ul style="list-style-type: none">• Equipment Knowledge• Acceptance Testing• Equipment testing and Diagnostics• ISO Reference Standards• Reporting and Documentation• Fault Severity Determination• Running a Successful Program |
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“Alan is an expert at explaining technical concepts to non technical people. He takes the time to make sure everyone’s questions are answered. Ample animations and videos make the concepts easier to understand. You will be surprised at how much you learn in this course!”

Alan Friedman is the founder and CEO of Zenco and the author of “[Audit it. Improve it: Getting The Most from Your Vibration Monitoring Program.](#)”

Alan has more than 30 years experience in helping people set up and manage vibration monitoring programs in every industry type, worldwide. From 1991 – 2006, Alan was a senior engineer at DLI Engineering (now SymphonyAI) where he was involved in product development, training, training course development and writing, publishing and presenting technical papers at tradeshow. In 2007, Alan joined the Mobius Institute and has taught vibration analysis in accordance with ISO18436-2 Categories I, II, III and IV to thousands of personnel worldwide. He is CRL, CMRP and ISO18436-2 Category IV certified and he speaks English and Spanish.



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Students will be able to specify vibration monitoring equipment, establish condition monitoring programs and set acceptance testing criteria. Students will be able to conduct advanced analysis of both steady state and transient vibration data, conduct 2 Plane in-situ balancing and recommend other CM technologies.

Detailed Topics List - Meets or exceeds ISO 18436-2

<p>Running a Monitoring Program</p> <ul style="list-style-type: none"> • ISO Standards • Managing Condition Monitoring • KPI's • Reliability • IIoT, Industry 4.0, Machine Learning, Artificial Intelligence <p>Condition Monitoring Technologies</p> <ul style="list-style-type: none"> • Electric Motor Testing • IR Thermography • Ultrasound • Lube Oil Analysis • Wear Particle Analysis • Vibration systems, wireless sensors, MEMs, CM architecture, remote monitoring <p>Signal Processing</p> <ul style="list-style-type: none"> • Signal processing block diagram • Filters • A/D Conversion • Sampling and Aliasing • Dynamic Range • Windows • Averaging • FFT • Triggering • Order Tracking <p>Phase Analysis</p> <ul style="list-style-type: none"> • Measuring Phase • True and Relative Phase • Phase and Units • High Spot and Heavy Spot • Common faults with 1x phase (unbalance, misalignment, looseness, bent shaft, cocked bearing, eccentricity etc) • Keyphasors™ 	<p>Natural Frequencies and Resonance</p> <ul style="list-style-type: none"> • Damped and Undamped Nat. Frequencies • SDOF and MDOF systems in detail • Bode and Nyquist plots • Bump tests • High spot and heavy spot • Unbalance response <p>Structural Testing</p> <ul style="list-style-type: none"> • Operational Deflection Shapes (ODS) • Motion Amplification • Bump tests • Modal Analysis / FEA • FRF, Transmissibility, Isolation <p>Dealing with Resonance</p> <ul style="list-style-type: none"> • Various approaches <p>Fault Detection</p> <ul style="list-style-type: none"> • Rolling element bearings • Gears • Journal Bearings (Orbits, centerline diagrams and transient analysis) • Other common machinery malfunctions <p>Corrective Action</p> <ul style="list-style-type: none"> • Alignment + Tolerances • Balancing (vectors, trial weights, 1 and 2 plane balancing) • No phase balancing • Balance standards • Safety <p>Acceptance Testing</p> <ul style="list-style-type: none"> • Test procedures • Standards <p>Standards, Alarms and Reporting</p> <ul style="list-style-type: none"> • ISO, IEC, API etc. • Advanced alarms and diagnostics • Fault severity determination • Trending • Acting on reports
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