

AMS Training and Certification

Educational Services



Emerson's AMS brand of asset monitoring and health analysis solutions helps you proactively manage your assets to improve reliability. This includes the solutions previously known as CSI.

Companies today rely on fewer people to do more work. That's why the need for training is more critical than ever to achieve and maintain cost-effective maintenance programs.

Emerson helps maximize the return on your investment in technology and people. Every year, more than 1,500 individuals attend courses on machinery health management across the country.

Our instructors share their own real-world experiences, and guide classes through hands-on exercises that reinforce the course objectives. Emerson's strategy for understanding machinery health includes training courses designed to help you start up and maintain your mechanical equipment. Our goal is to provide you with the knowledge to keep your plant running smoothly.

- Defined skill paths guide you on how to become an expert across multiple technologies.
- Lab work provides hands-on opportunities in each course.
- Certification testing is available for most technologies.
- Additional instruction is available through books, charts, pocket guides, workshops and eLearning courses.



AMS Training and Certification



Path to Success



Pick the curriculum of your choice or let us help guide your workforce on a path to success.



Category I Vibration Analyst Path	Category II Vibration Analyst Path	Category III Vibration Analyst Path	Category IV Vibration Analyst Path	Lubrication Analyst Path	Online Monitoring Path	Complementary PdM Technology
Introduction to Vibration Analysis (course 2069)	Intermediate AMS Machinery Manager Software (course 2074)	Advanced AMS Machinery Manager Software (course 2070)	Basic Rotor Dynamic Analysis for Vibration Analysts (course 2034)	Lubrication Level 1 and Level 2 with certification exam (course 2082)	Online Prediction Operation & Maintenance (course 2088)	Balancing Theory and Applications with CSI 2130 (course 2015) or with AMS 2140 (course 2016)
Fundamentals of CSI 2130 (course 2072) or AMS 2140 (course 2076)	Intermediate Vibration Analysis (course 2032) & Category II exam (course 2022EX)	Advanced Vibration Analysis (course 2033) & Category III exam (course 2023EX)	Advanced Instrumentation & Analysis Techniques (course 2044)	Wear Debris Analysis Workshop (course 2084)	Online Protection Operation & Maintenance (course 2080)	Laser Alignment with CSI 2130 (course 2092) or AMS 2140 (course 2096)
Introduction to AMS Machinery Manager Software (course 2068)			Category IV Exam (course 2024EX)	OilView for AMS Machinery Manager Software (course 2083)	AMS 6500 ATG Operation and Maintenance (course 2086)	Electric Motor Diagnostics and Basic MotorView (course 2081)
Basic Vibration Analysis (course 2031) & Category I Exam (course 2021EX)	Highly recommended optional courses: <ul style="list-style-type: none"> ■ PeakVue & Autocorrelation (course 2035) ■ Advanced AMS 2140 (course 2094) or CSI 2130 (course 2091) ■ Time Waveform Analysis (course 2051) ■ Customizing Analysis Parameter Sets (course 2051) 	Highly recommended optional courses: <ul style="list-style-type: none"> ■ PeakVue & Autocorrelation (course 2035) ■ AMS Machinery Manager Database Optimization Workshop (course 2003) ■ Time Waveform Analysis (course 2051) ■ Customizing Analysis Parameter Sets (course 2051) 			Turbomachinery Diagnostics (course 2089)	Reciprocating Equipment Analysis (course 2050)
Highly recommended optional course: AMS Machinery Manager: Vibration Analysis Workshop for the PDM Professional (course 2008B)						



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Course #	Courses	Course Description
AMS Machinery Manager Software		
<p>2068</p>	<p>Intro to AMS Machinery Manager</p>  <p>AMS Machinery Manager</p>	<p>This 4-day course was designed for the new users of AMS Machinery Manager. Students learn methods of database building and vital features of route creation such as collecting reference data, analyzer/computer communication, and the basic concepts of Analysis Parameter Sets, Alarm Limit Sets, and Fault Frequency Sets. A machinery analyzer is used to demo the process of loading routes for data collection.</p> <p>Prerequisites: Computer experience with the Windows operating system and some vibration analysis experience are recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ RBMwizard ■ Database Setup ■ Route Management and Data Transfer ■ Reports ■ Vibration Analysis module <p>This course is based on the current mass release of the AMS Machinery Manager software. Students can call to verify if the course is appropriate to the version they are using. Wireless technology, Infrared Analysis, MotorView, Online Monitoring and OilView modules are covered in other course offerings and are not part of this course.</p>
<p>2074</p>	<p>Intermediate AMS Machinery Manager</p>  <p>AMS Machinery Manager</p>	<p>This 4-day course teaches some of the more advanced machinery analysis techniques available in AMS Machinery Manager Software. This course focuses more on analysis and reporting with the use of Vibration Analysis module, Reporting module, Exception Analysis, PeakVue™ technology and full version of RBMview.</p> <p>Prerequisites: Introduction to AMS Machinery Manager (course # 2068), Basic Vibration Analysis course or 6 months vibration analysis experience are recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ PeakVue™ Technology ■ Vibration Analysis module ■ Reporting Module ■ Exception Analysis ■ Nspectr ■ RBMview ■ Data Transfer ■ Route Modification <p>This course is based on the current mass release of the AMS Machinery Manager software. Students can call to verify if the course is appropriate to the version they are using. Wireless technology, Infrared Analysis, MotorView, Online Monitoring and OilView modules are covered in other course offerings and are not part of this course.</p>

<p>2070</p>	<p>Advanced AMS Machinery Manager</p>  <p>AMS Machinery Manager</p>	<p>This 4-day course is the third in our series of AMS Machinery Manager courses. Its focus is on the management, modification and optimization of the existing AMS Machinery Manager database. Students will learn how to modify existing Wizard configurations, add and edit users, statistically adjust alert and fault levels, make global database changes, and many other very useful database functions. This course is intended for the advanced user who has already created a machinery database and has been acquiring, storing and analyzing data for six months or more.</p> <p>Prerequisites: Intermediate Vibration (course #2032) or one-year vibration analysis experience are recommended. Experience with the Windows operating system is recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Advanced analysis features in Vibration Analysis Module ■ Problem reporting ■ Status-at-a-Glance operation and reporting ■ Nspectr® ■ Wizard - reporting techniques and modification/addition of setup information ■ AutoStat ■ Database Utility ■ Database Zip Utility ■ Network Administration ■ Data Locker Management <p>This course is based on the current mass release of the AMS Machinery Manager software. Students can call to verify if the course is appropriate to the version they are using. Wireless technology, Infrared Analysis, MotorView, Online Monitoring and OilView modules are covered in other course offerings and are not part of this course.</p>
<p>2003</p>	<p>AMS Machinery Manager Database Optimization Workshop</p>  <p>AMS Machinery Manager</p>	<p>This 4-day course is the fourth in our series of AMS Machinery Manager courses. This course will instruct experienced users on database optimization techniques using an existing database and enhancing it by calculating and implementing improved Analysis Parameter (AP) sets. Students will learn how to identify when an AP set needs to be adjusted and how to make the adjustments effectively. This course will also focus on updating and optimizing alarm sets. Applications will include Vibration Analysis tab, Database Setup, Database Utility, Stored Data Management and AutoStat.</p> <p>Prerequisites: Introduction to AMS Machinery Manager (course #2068), Intermediate AMS Machinery Manager (course #2074), Advanced AMS Machinery Manager (course #2070), Intermediate Vibration (course #2032) or two years' vibration analysis experience are strongly recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Understanding the Database ■ Managing Invalid Data ■ Analysis Parameter Set Review ■ Electric Motor Points ■ Manual Alarm Adjustment ■ AutoStat Alarm Adjustment ■ Warning Alarms <p>This course is based on the current mass release of the AMS Machinery Manager software. Students may call to verify if the course is appropriate to the version they are using.</p>

<p>2004</p>	<p>Customizing Analysis Parameter Sets</p>  <p>AMS Machinery Manager</p>	<p>This 3-day workshop is the fifth in our series of AMS Machinery Manager courses. This course will instruct users on how to enhance an existing database by calculating and implementing improved Analysis Parameter (AP) sets. Students will learn how to identify when an AP set needs to be adjusted and how to make the adjustments effectively. Applications will include Vibration Analysis tab, Database Setup and Database Utility.</p> <p>Prerequisites: Introduction to AMS Machinery Manager (course #2068), Intermediate AMS Machinery Manager (course #2074), Intermediate Vibration (course #2032) or two years' vibration analysis experience are strongly recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ AP Set Review ■ AP Set Characteristics ■ AP Set Creation ■ Reasons for Reviewing and Adjusting AP Sets ■ PeakVue™ <p>This course is based on the current mass release of the AMS Machinery Manager software. Students may call to verify if the course is appropriate to the version they are using.</p>
<p>Plantweb™ Optics</p>		
<p>2040</p>	<p>Introduction to Plantweb™ Optics</p> 	<p>This 2-day course is designed for new users of the Plantweb Optics software, and is based on the current software release.</p> <p>Students will learn how to navigate through the software, manage their database by adding and mapping locations and assets using the Plantweb Optics Asset Explorer utility. Students will also learn how to navigate the Plantweb Optics Asset Viewer utility used on PC/ laptop and mobile device applications to receive real-time information about equipment that is relevant to their job.</p> <p>Prerequisites: Computer experience with the Windows operating system is recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Basic Navigation ■ Database Building using the Asset Explorer utility ■ Asset Viewer utility and subscriptions ■ Historian ■ Dashboard ■ User Manager (Setting users/Permissions/Tokens for the App) ■ Asset Viewer utility Mobile App ■ Asset Source Interface (ASIs)

Wireless Transmitter		
<p>2042</p>	<p>AMS Machine Works for Plantweb Optics</p> 	<p>This 2-day course is designed for users of AMS Machine Works and is based on the current software release.</p> <p>Students will learn how to navigate through the software, manage the database and add locations using the Plantweb Optics Asset Explorer utility. The AMS 9420 and AMS 6500 ATG are used to show the user how to connect vibration measurement points for data collection. Collected data will be analyzed using AMS Machine Works Vibration Analyzer.</p> <p>Students will also learn how to use mobile device applications to receive real-time information about equipment that is relevant to their job.</p> <p>Prerequisites: Computer experience with the Windows operating system and some vibration analysis experience are recommended.</p> <p>Topics covered include:</p> <ul style="list-style-type: none"> ■ Basic Navigation ■ Database Building using the Asset Explorer utility ■ Machine Journal ■ Dashboard ■ Mobile App
<p>2025</p>	<p>AMS 9420 Wireless Vibration Transmitter for AMS Machinery Manager</p> 	<p>This 2-day course is intended for technicians, engineers and other plant personnel who need to know how to setup, maintain, troubleshoot, and view data from the AMS 9420 Wireless Vibration Transmitter in conjunction with the AMS Machinery Manager Software. The course uses lectures and labs to maximize the hands-on experience for the students.</p> <p>Prerequisites: Course 2375 (Wireless Self Organizing Network) and some experience in Networks and Host integration would be helpful.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Overview of AMS 9420 hardware components ■ Overview of the 1420 Wireless Gateway ■ Vibration basics and terminology relating to AMS 9420 ■ Import data into AMS Machinery Manager ■ View data using AMS Machinery Manager ■ Troubleshooting and maintenance


Machinery Health Analyzer		
<p>2076</p>	<p>Fundamentals of the AMS 2140</p> 	<p>This 2-day hands-on course focuses on the basic operation of the AMS 2140 Machinery Health Analyzer. Students collect data on lab machines. This course is designed for personnel with little or no experience with Emerson analyzers, but who are experienced in the field of vibration data collection and analysis.</p> <p>Prerequisites: Understanding of vibration analysis. Familiar with basic vibration collection principles.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Analyzer/computer communication ■ Predefined route data collection ■ Job data collection and setup ■ Manual mode measurements ■ Introduction to AMS 2140 Analysis Expert Functions <p>Note: You may take with Introduction Fundamentals of Vibration as a four day course.</p>
<p>2094</p>	<p>AMS 2140 Advanced Functions</p> 	<p>This 3-day course is intended for personnel with single-channel vibration analysis experience and little or no multi-channel experience. This class covers advanced signal processing using Emerson’s patented PeakVue™ technology for slow-speed analysis, coherence and cross-channel phase, operating deflection shapes (ODS), modal analysis, and other advanced techniques.</p> <p>Prerequisites: Single channel vibration analysis experience is required.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ PeakVue™ technology ■ Resonance Detection ■ Dual channel data collection ■ Fundamentals of cross-channel data collection ■ Introduction to coherence and cross-channel phase ■ Orbit data collection ■ Introduction to Operating Deflection Shape (ODS) testing methods ■ Introduction to modal analysis testing methods ■ Advanced two-channel DLP ■ Zoom Analysis, Cascade, and Overall ■ Transient time waveform capture and analysis ■ AMS 2140 Analysis Experts


Vibration Analysis		
2069	<p>Introduction to Vibration Analysis</p>	<p>This 2-day course is for those with no prior experience in vibration analysis. The class prepares participants for the Basic Vibration Analysis Training Course. Students learn about causes of vibration and methods of measurement. Although the training course does not provide instruction on Emerson’s technologies, the class uses them to demonstrate vibration principles.</p> <p>Prerequisites: None</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Introduction to Vibration ■ Understanding the Vibration Signal ■ Analysis Parameters ■ Recognizing Basic Fault Patterns ■ Tips for Data Analysis
2031	<p>Basic Vibration Analysis (Category I compliant)</p> 	<p>This 4-day course complies with Category I Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics.</p> <p>This course is intended to enable students to operate single channel machinery analyzers, dump and load routes, recognize the difference between good and bad data, and compare vibration measurements against pre-established alert settings. Although this training course is not product specific, students will use Emerson’s AMS technologies for demonstration purposes. The class shows the student how to use the vibration analyzer in conjunction with Emerson’s AMS Machinery Manager supported software to analyze basic vibration defects.</p> <p>Prerequisites: Fundamentals of Vibration Analysis course or a cumulative six months of field experience is recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Introduction to Vibration ■ Measurement Setup ■ Data collection and analysis ■ Basic analyzer functions ■ The class shows students how to recognize machine defects such as: <ul style="list-style-type: none"> ● Imbalance ● Shaft misalignment ● Looseness ● Rolling element bearing defects ● Gear problems ● Resonance ● Belt Defects ● AC Induction Motors ● Journal Bearings ● Rotating Equipment

2032	Intermediate Vibration Analysis (Category II compliant)	<p>This 4-day course complies with Category II Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics.</p> <p>Category II vibration analysts are expected to be able to select appropriate vibration measurement techniques, set up instruments for basic resolution of amplitude, frequency, and time, perform basic spectrum analysis, maintain a database of results and trends, perform single-channel impact tests, classify, interpret, and evaluate test results in accordance with applicable specifications and standards, recommend minor corrective actions, and understand basic single plane field balancing concepts.</p> <p>This course also features the Emerson machinery health analyzers in conjunction with advanced machinery analysis techniques. Discussions of case histories on machinery faults are one of the focal points of this course.</p> <p>Prerequisites: Basic Vibration Analysis course and a cumulative 18 months of field experience are recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none">■ Recognition of Machine Defects including:<ul style="list-style-type: none">● Reference standards● Imbalance● Misalignment● Bent Shaft● Soft Foot● Antifriction and Journal Bearings● Looseness● Resonance● Electrical Defects● Gearboxes● Belts
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<p>2033</p>	<p>Advanced Vibration Analysis (Category III compliant)</p>	<p>This 4-day course complies with Category III Vibration Analyst per ISO standard 18436-2: Vibration condition monitoring and diagnostics.</p> <p>This course expands on the subjects covered in the Intermediate Vibration course (Category II), especially in the areas of fault analysis and corrective actions. The class details advanced analysis techniques. The dual channel machinery health analyzer features are introduced including the use of AMS Machinery Health Manager Software to set up the advanced analyzer features and the powerful downloadable programs for data collection. The transient machinery health analyzer capabilities are covered such as long-term time waveform. The class covers advanced resonance detection using a variety of testing methods, including triggered data collection.</p> <p>Prerequisites: Intermediate Vibration Analysis course and a cumulative three years of field experience are recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Specify appropriate vibration instrumentation hardware and software for both portable and permanently installed systems ■ Perform spectrum and time waveform analysis under both steady-state and unsteady operating conditions ■ Measure and analyze basic operational deflection shapes (ODS) ■ Measure and analyze PeakVue™ technology measurements ■ Slow Speed Technology (SST®) ■ Zoom Analysis ■ Transient Techniques ■ Digital Signal Processing ■ Demodulation ■ Resonance Detection
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<p>2034</p>	<p>Basic Rotor Dynamic Analysis for Vibration Analysts (Category IV, Part One)</p> 	<p>This course is part one of the two courses required for the Category IV examination. This 5-day class is designed to allow the students to better understand rotor dynamics and their options when facing a problem piece of equipment that is running at or close to its critical speed. This course will provide vibration analysts a road map to develop a plan to perform basic calculations to estimate the critical speeds of different types of machinery. Lab calculations will be performed by the students throughout the course to reinforce topics learned in the class. These techniques can be applied to all types of rotating machinery using either journal bearings or rolling element bearings.</p> <p>The students will be able to calculate stiffness for rolling element bearings and journal bearings using the provided equations. Tables for viscosities, journal bearing damping and stiffness will be supplied, along with other materials required for a critical speed model. An extensive list of required equations for calculation of natural frequencies will also be provided. The single degree of freedom modeling will also be taught.</p> <p>Upon completion of the course, students will have the skills to perform a hand calculation to accurately estimate the critical speed of a shaft. Additionally, the students will be able to develop the necessary parameters for the development of a computer rotor dynamic model.</p> <p>Topics Include:</p> <ul style="list-style-type: none">■ Introduction to Basic Rotor Dynamics■ Natural Frequencies■ Free versus Forced Vibrations■ Stiffness & Damping■ Natural Frequency Equations■ Forced Vibrations■ Amplification (Q) Factor calculation Methods■ Types of Journal Bearings■ Center Hung Rotors versus Overhung Rotors■ Rigid Rotors versus Flexible Rotors■ Subharmonic Resonance■ Shaft Instabilities■ Cracked Shafts■ Required Information for Critical Speed Analysis■ Field Testing for Modeling Requirements■ Rotor Modeling■ Shaft Hand Calculations■ Computer Modeling
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<p>2044</p>	<p>Advanced Instrumentation & Analysis Techniques (Category IV, Part Two)</p> 	<p>This course is part two of the two courses required for the Category IV examination. This 4-day class will provide the attendee with a solid background on how a data collector, FFT analyzer, functions. It will provide necessary information on how the FFT process works and how the end user can use the instrument to its' full capabilities. Students will learn the strengths and limitations of the modern data (FFT) collector.</p> <p>Demonstrations will be performed to reinforce training topics. Lab calculations will be performed by the students throughout the course to reinforce topics learned in the class.</p> <p>Topics Include:</p> <ul style="list-style-type: none">■ The FFT Analyzer<ul style="list-style-type: none">● Resolution● Dynamic Range● Window Effects● Overlap● Filtering● Accuracy of the amplitudes and frequencies versus window effects● Averaging■ Modulation■ Beats■ Multi-Channel Analysis<ul style="list-style-type: none">● Transient Data Analysis<ul style="list-style-type: none">- Nyquist Plots- Bode Plots- Waterfall Plots● Impact Testing<ul style="list-style-type: none">- Natural Frequencies- Mode Shapes versus Operating Deflection- Stiffness from Impact Testing- Methods of calculating Damping From "Q" Factor- Modal Analysis
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<p>2035</p>	<p>PeakVue™ Mystery & Autocorrelation</p>	<p>This 3-day course provides insight into advanced functionality of Emerson’s unique PeakVue™ technology and Autocorrelation. Machine vibrations generate both macro and microscopic vibrations, and microscopic vibrations generate stress waves that have frequency ranges determined by the mass of the impacting object. The properties of these stress waves will be explained.</p> <p>The Autocorrelation section of the course will teach the power of the autocorrelation coefficient function for the analysis of vibration induced time wave form data. The autocorrelation function data generally are computed from the same time wave form data used to compute the spectrum. The strengths of the autocorrelation data are complimentary to the strengths of the spectral data.</p> <p>This course makes use of both case studies from real-life examples of common faults and live demonstrations illustrating specific mounting procedures to reliably detect certain faults. The difference between PeakVue™ technology techniques and demodulation will also be demonstrated.</p> <p>Prerequisites: Students should be familiar with vibration data collection and analysis techniques and the use of AMS Machinery Manager Software.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Proper PeakVue™ technology set-ups for all speeds (as low as 1 rpm) ■ Sensor selection and sensor mounting ■ Setting alarm levels ■ Choosing trend parameters ■ Analyzing PeakVue™ technology spectra and waveforms ■ Uses of the circular waveform plot ■ Introduce the autocorrelation coefficient ■ Demonstrate the computation of the autocorrelation coefficient data from the time wave form data ■ Highlight the strengths of the autocorrelation coefficient function data relative to spectra data ■ Demonstrate the use of the autocorrelation coefficient data as a diagnostic tool to support the spectra data for vibration analysis through several case studies. ■ Identify unique patterns of the autocorrelation function data for certain classes of bearing faults, gearing faults, etc.
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<p>2050</p>	<p>Reciprocating Equipment Analysis</p> 	<p>This 3-day course will familiarize students with the advantages of condition monitoring of reciprocating equipment using Emerson’s AMS 2140 analyzer. This course will also demonstrate how to correctly setup databases to accurately diagnose equipment faults and possible deficiencies. By properly setting up and configuring databases, users can take advantage of the broad capabilities of these monitoring solutions and incorporate them into their current rotating equipment condition monitoring programs. Key learning topics will include database setup, transducer selection and mounting (best practices), and accurate deficiency identification of reciprocating engine and compressor faults as related to crankshaft angle.</p> <p>Prerequisites: Students should be familiar with the AMS 2140 and AMS Machinery Manager software.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Overview of reciprocating equipment in various industries ■ Operation ■ Component familiarization ■ Database setup ■ Proper transducer selection ■ Best practices for data collection ■ Data analysis ■ Case studies/ examples
<p>2051</p>	<p>Time Waveform Analysis</p>	<p>This 3-day course is designed to upgrade and enhance waveform analysis skills for vibration technicians and reliability engineers. There are several reasons that vibration analysts want to understand and use waveform analysis, since some significant defects are better analyzed in the time domain. The time domain provides visual confirmation of amplitude enhancement and reduction. Time waveform analysis can present, in a static picture, amplitude variations and changes in frequencies that the FFT cannot display without using multiple (dynamic) graphics. Further, a waveform graphically presents accurate peak vibration amplitudes representing defect severity.</p> <p>Prerequisites: Intermediate vibration analysis or eighteen-month vibration related field experience is recommended.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Waveform Data Acquisition: Analog to Digital Conversion (A/D) ■ Waveform Parameters for Trending: Peak to Peak, Crest Factor, and Analog Overall ■ Waveform Tools: Revolution Markers, Difference Frequency markers, Phase, Peak, RMS, Crest Factor ■ Waveform Patterns: Sinusoidal, Impacting, Truncated, Asymmetric, Transient/Random, Modulated and Discontinuity or Bad/Compromised Data. ■ FFT vs. Waveform: Benefits and limitations of each ■ Applications of Waveform Analysis: Synchronous Time Averaging (STA) for rolls in nip; Peak Hold averaging for maximum carrier/sideband frequency amplitudes for rolling element bearings; Time Difference cursors for identifying beat frequencies and repeating impacts (gear teeth cracks or defects); Transient Analysis of motor inrush current; Distinguishing Misalignment from Looseness using waveform analysis as a confirmation to the FFT data; and Gearbox Analysis using STA waveforms and standard waveform discontinuity analysis.

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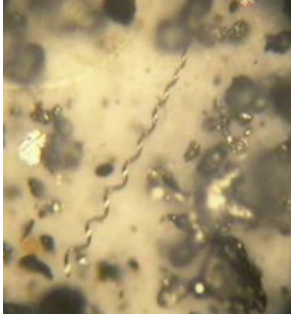
Vibration Analyst Exam		
2021EX	Category I Exam	<p>Test Format: Written exam</p> <p>Duration: 2 hours</p> <p>Passing Grade: 70%</p> <p>Eligibility for Examination:</p> <ul style="list-style-type: none"> ■ Minimum Duration of Training (hours): 30 ■ Minimum Duration of Cumulated Experience (months): 6
2022EX	Category II Exam	<p>Test Format: Written exam</p> <p>Duration: 3 hours</p> <p>Passing Grade: 70%</p> <p>Eligibility for Examination:</p> <ul style="list-style-type: none"> ■ Minimum Duration of Training (hours): Category I + 38 ■ Minimum Duration of Cumulated Experience (months): 18 ■ Passing Category I exam is NOT a prerequisite for taking Category II exam.
2023EX	Category III Exam	<p>Test Format: Written exam</p> <p>Duration: 4 hours</p> <p>Passing Grade: 70%</p> <p>Eligibility for Examination:</p> <ul style="list-style-type: none"> ■ Minimum Duration of Training (hours): Category II + 38 ■ Minimum Duration of Cumulated Experience (months): 36 ■ Has taken and passed the Category II exam.
2024EX	Category IV Exam	<p>Test Format: Written exam</p> <p>Duration: 5 hours</p> <p>Passing Grade: 70%</p> <p>Eligibility for Examination:</p> <ul style="list-style-type: none"> ■ Minimum Duration of Training (hours): Category III + 64 ■ Minimum Duration of Cumulated Experience (months): 60 ■ Has taken and passed the Category III exam.

Online Monitoring		
<p>2088</p>	<p>Online Prediction Operation & Maintenance</p> 	<p>This 4-day course best suits those who have a CSI 4500, AMS 6500, AMS 2600 or XP32 system installed and operational prior to attending the course. The course is designed for:</p> <ul style="list-style-type: none"> ■ System users or analysts ■ Personnel using the CSI 4500, AMS 6500, AMS 2600 or XP32 daily ■ Those responsible for configuring databases and analyzing data <p>Prerequisites: knowledge of vibration and industrial machinery is helpful, but not necessary.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Vibration basics and terminology relating to the CSI 4500, AMS 6500, AMS 2600 or XP32 ■ System overview: functionality and system components ■ Online Watch - used to monitor the system daily ■ Online Config - adding a new machine to an existing database ■ Vibration Analysis Module - spectrums, waveforms and trend data ■ PeakVue™ technology Processing ■ Transient setup and capture evaluation ■ Review of customer databases
<p>2086</p>	<p>AMS 6500 ATG Operation & Maintenance</p>	<p>This 3-day hands-on training course is for any user or analyst involved with operating and maintaining an AMS 6500 ATG System. Workshops include practice with module and software configuration.</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Overview of hardware and modules ■ Rack and module configuration ■ Machine Studio software functionality, navigation and configuration ■ System troubleshooting and maintenance ■ ATG View App
<p>2089</p>	<p>Turbomachinery Diagnostics</p> 	<p>This 4-day class covers details of the operation, maintenance, management, diagnostics and design of rotating machinery using vibration information. Emphasis is placed on interpreting start-up/shutdown and steady state vibration data plots, understanding the sources of rotating machinery vibration and recognizing common machinery malfunctions.</p> <p>This seminar makes extensive use of full featured field diagnostic equipment to reinforce lecture topics. This class is designed for engineers, supervisors, managers, and rotating equipment support professionals responsible for design, operation, and maintenance of rotating equipment. Case histories will be presented to reinforce class topics and facilitate class discussion.</p>

Corrective		
<p>2016</p>	<p>Balancing Theory & Applications with AMS 2140</p> 	<p>This 4-day class (2 days on Balancing Theory and 2 days on Balancing Applications with AMS 2140) teaches how to perform single- and dual-plane balancing using both graphical and analyzer-based balancing methods. The class uses the AMS 2140 Machinery Health Analyzer on lab machinery.</p> <p>Prerequisites: Understanding of vibration analysis is recommended</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Imbalance identification ■ Use of vectors ■ Calculating influence coefficients ■ Use of the auxiliary analyzer balance functions ■ Use of UltraMgr module ■ Calculating a system lag ■ Estimate trial weights ■ Balancing flexible rotor systems ■ Balancing overhung rotors ■ Applying balancing techniques in an industrial setting
<p>2096</p>	<p>Laser Alignment with AMS 2140</p> 	<p>This 2.5-day class is intended for personnel who have limited or no alignment experience. The course provides training on shaft alignment using Emerson’s laser alignment product line with focus on the AMS 2140 Machinery Health Analyzer. This course includes hands-on training with horizontal alignment and vertical alignment demonstrators and covers management of an alignment program using the AMS Machinery Manager software.</p> <p>Prerequisites: None</p> <p>Topics Include:</p> <ul style="list-style-type: none"> ■ Alignment: What is it? Why? ■ Required pre-shutdown checks ■ Pre-alignment checks and corrections ■ The science and art of alignment ■ Tools & techniques for moving equipment ■ Time-savers ■ Use of the laser alignment product line with AMS 2140 Machinery Health Analyzer ■ Alignment information ■ Management systems: methods and advantages

Lubrication		
<p>2082</p>	<p>Lubrication Level I & II (with Certification Exam)</p> 	<p>This 3-day course is designed for individuals who have limited or no oil analysis experience. Guidelines and instruction for starting an oil analysis program will be provided. The course focuses on the basic properties of lubricants and lubricant specifications including additive packages. An overview of laboratory testing methods and interpretation of test data is taught. In addition, instruction is provided on proper storage and handling of new, unused lubricants, as well as sample point identification and best practices for collecting samples from machinery. Basic contamination control and wear debris analysis and identification is covered. The focus of the level two portion of the course is the use of oil analysis with other predictive technologies to enhance a machinery health program. Machine life extension and reduction of unscheduled downtime will be covered in depth. Training includes introductions to lubricant engineering, failure concepts, and failure prevention. Information will be provided on greases and synthetic lubricants, including advantages and applications. The importance of Wear Debris Analysis and contamination control and their impact on reliability will be stressed. Guidelines and step-by-step procedures will be offered for consolidating lubricants, setting alarm limits, as well as managing and enhancing existing lubrication programs.</p> <p>Prerequisites: None.</p> <p>Additional topics include:</p> <ul style="list-style-type: none"> ■ The productive lubricant analysis program ■ Analyzing oil data ■ Identifying common types of wear debris, their origins, and corrective actions ■ The importance of contamination control ■ Designing sampling, storage and handling procedures ■ The components of RBM lubrication program ■ Methods for extending machine life ■ The importance of Wear Debris Analysis ■ Contamination Control ■ Lubricant consolidation ■ Establishing alarms <p>Level I & Level II Lubrication Certification exams will be administered at the end of the course for no additional charge</p>

AMS Training and Certification

2084	Wear Debris Analysis Workshop 	<p>Wear debris analysis is often referred to as the most important form of oil analysis. This 2-day course teaches how to apply conditions such as the environment and other outside factors to make an accurate root cause analysis. Attendees gain a basic understanding of wear particle generation, sample preparation techniques, identification and characterization of wear particles. Data generated using the OilView® instrumentation and how it applies to WDA is discussed as well as the use of the OilView® WDA module. WDA skills must be maintained by the student through regular practice and may be developed by reading further on the subject.</p> <p>Training is presented in the following areas:</p> <ul style="list-style-type: none">■ Wear particle generation■ Tribology, friction, and wear■ Lubrication fundamentals■ Sample screening techniques■ Sample preparation techniques■ Overview of the OilView® WDA module■ Particle identification and characterization exercise■ Identification and characterization of wear debris using photographs and/or live samples
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For additional information, check out our website at www.emersonprocess.com/csi, or contact us at 800-675-4726 or mhm.training@emerson.com

To enroll, [Click Here](#)

Emerson
Reliability Solutions
835 Innovation Drive
Knoxville, TN 37932 USA
☎ +1 865 675 2400

🌐 www.emerson.com/ams

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