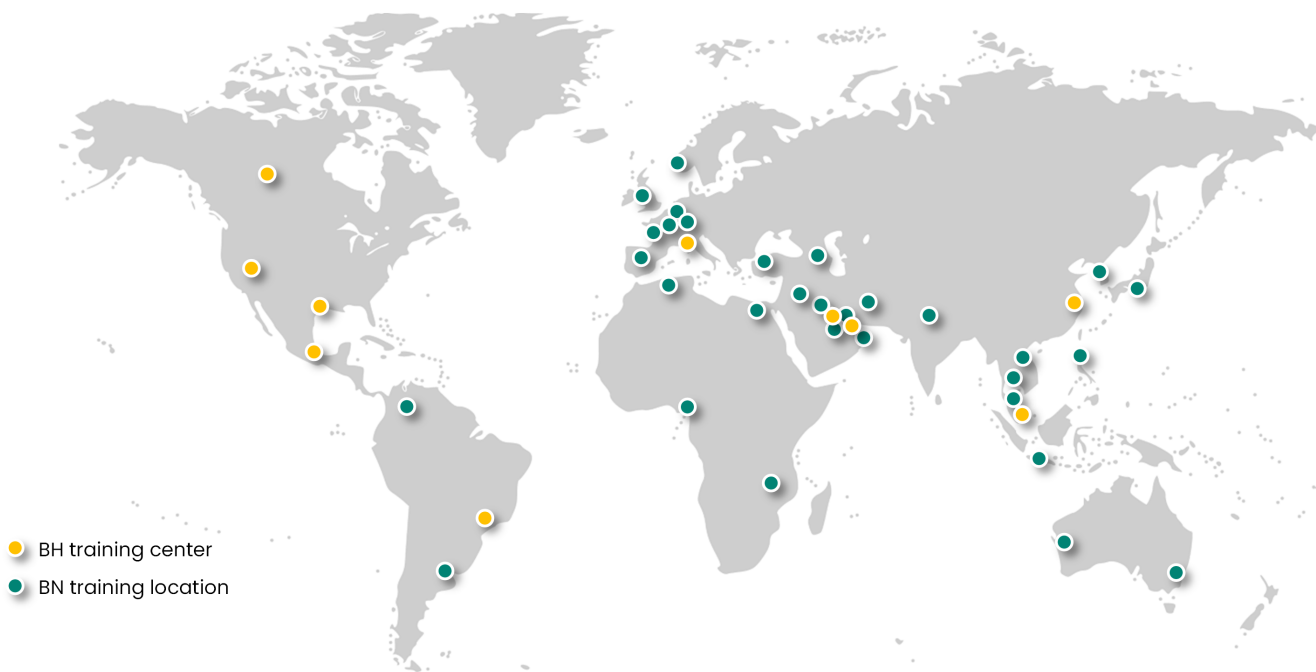


TECHNICAL TRAINING

Condition Monitoring and Reliability
Global Catalogue



TRAINING LOCATIONS



North America

- Canada | Leduc
- United States | Houston
- United States | Minden

Latin America

- Argentina | Buenos Aires
- Brazil | Campinas
- Colombia | Bogota
- Mexico | Queretaro

Africa

- Algeria | Algiers
- Egypt | Cairo
- Nigeria | Port Harcourt
- South Africa | Midrand

Europe

- Azerbaijan | Baku
- France | Nantes
- Germany | Frankfurt
- Hungary | Budapest
- Italy | Florence
- Netherlands | Delft
- Norway | Bergen
- Spain | Madrid
- Türkiye | Istanbul
- United Kingdom | Aberdeen
- United Kingdom | Warrington

Middle East

- Iraq | Baghdad
- Kuwait | Kuwait City
- Oman | Muscat
- Pakistan | Islamabad
- Qatar | Doha
- Saudi Arabia | Dhahran
- United Arab Emirates | Dubai

India

- India | Pune

APAC

- Australia | Perth
- Australia | Sydney
- China | Shanghai
- Indonesia | Jakarta
- Japan | Tokyo
- Malaysia | Kuala Lumpur
- Philippines | Muntinlupa
- Singapore | Singapore City
- South Korea | Pangyo
- Thailand | Rayong
- Vietnam | Hanoi

TRAINING CONTACTS

AMERICAS

Latin America

Region Training Manager:

Mario Eduardo Castillo

Email: BNTrainingLA@bakerhughes.com

North America

Region Training Manager:

Mark Werkheiser

Email: BNTrainingNA@bakerhughes.com

APAC

Asia, China

Region Training Manager:

Nick Liu

Email: BNTrainingAsia@bakerhughes.com

EMEIA

Africa, India, Middle East

Region Training Manager:

Sherif Mohammed

Email: BNtrainingMEA@bakerhughes.com

Europe

Region Training Manager:

Elie Saba

Email: BNtrainingEU@bakerhughes.com

Bently Nevada

MONITORING COURSES

FUNDAMENTALS OF VIBRATION

This foundation course teaches the basics of vibration monitoring and maintenance strategies. Participants learn key vibration terminology, the parameters and units used to measure vibration motion, and the principles of vibration transducer operation. Workshops include identifying amplitude, frequency, and phase from time base and spectrum plots.

Format

Duration: 14 hours

Schedule: 2 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Technicians with limited experience on vibration machinery
- Technicians who work on vibration control with condition monitoring program
- Engineers involved in condition monitoring
- Technicians in preventive maintenance

Objectives

- Explain the reasons for vibration monitoring and maintenance strategies.
- Identify key components and describe vibration motion in a measurement plane.
- Define the parameters used to measure vibration motion and state the units used to express each parameter.
- Describe the principles of vibration transducer operation, the benefits and disadvantages of each type, and typical scale factor of output signal.
- Apply selection criteria to choose a usable vibration transducer for a specific machine vibration.
- Read values of amplitude, frequency, phase and recognize sources of vibration indicated by waveform and spectrum plots.

Additional Requirements: None

3500 OPERATION AND MAINTENANCE

A hands-on course for personnel involved with operating and maintaining a 3500 monitoring system. Includes an overview of hardware components, rack configuration software, and maintaining and troubleshooting the system. Workshops include practice with live monitors and racks.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers who work on maintenance and troubleshooting of 3500 monitoring system
- Instrument technicians
- 3500 monitoring system users

Objectives

- Explain the role of 3500 Monitoring System in machinery monitoring and protection.
- Identify installation conditions that affect the correct operation of proximity transducer systems
- Test monitor alarms and verify channel values in a radial vibration monitor.
- Use Bently Nevada propriety configuration software to configure, verify, and troubleshoot the 3500 monitor system
- Troubleshoot the 3500 monitor system and associated transducers using software and hardware techniques

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

3500 MONITORING SYSTEM FOR TSI APPLICATIONS

This hands-on course with a focus on Turbine Supervisory Instrumentation (TSI) is a continuation of the standard 3500 Operation and Maintenance course. Topics include configuring and verifying the monitors: the 3500/45 with differential and case expansion, valve position, and thrust; the 3500/50 with rotor speed, zero speed, rotor acceleration; the 3500/42 with eccentricity and thrust. Workshops include practice with live data monitors and racks.

Format

Duration: 14 hours

Schedule: 2 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- 3500 monitoring system users
- Engineers who maintain and troubleshoot 3500 monitoring systems
- Instrument technicians

Objectives

- Explain the operational differences between the 8mm, 25mm, 35mm, and 50mm probes.
- Demonstrate the proper technique to install and verify the scale factor for an LVDT for Case Expansion or Valve Position while verifying at the 3500 system for accuracy.
- Explain and show mathematically the voltages required for installing Differential Expansion probes and verify at the 3500 system.
- Explain and show mathematically the voltages required for installing the Eccentricity probe and verify at the 3500 system.
- Explain the proper procedure for installing Keyphasor and Rotor speed/Rotor Acceleration probe.
- Connect field wiring for specific input signals to the 3500 Monitoring System and verify signals.

Prerequisites

Recommended Prerequisites:

- 3500 Operation and Maintenance

Additional Requirements: None

3500 RECIPROCATING COMPRESSORS

MONITORING AND PROTECTION

This 1-day course equips your instrumentation and control (I&C) personnel with the skills they need to maintain machine monitoring instrumentation on your reciprocating compressors. As a result, you will have more reliable asset monitoring and increase machine availability for optimal safe production.

Format

Duration: 7 hours

Schedule: 1 day

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- 3500 monitoring system users
- Engineers involved in maintenance and troubleshooting of the 3500 monitoring system
- Instrument technicians

Objectives

- List the basic components of an API-618 reciprocating compressor
- Explain the value of monitoring reciprocating compressors and describe a typical monitoring strategy in line with API-618 and API-670 guidelines
- Explain the importance of crank angle reference measurement in recip monitoring and diagnostics
- Configure RECIP-specific 3500 monitoring modules
- Identify rod drop and rod position measurements
- Calibrate, set up, and maintain rod drop and rod position measurements

Prerequisites

Recommended Prerequisites:

- 3500 Operation and Maintenance

Additional Requirements: No additional requirements

3500 MONITORING SYSTEM TROUBLESHOOTING

Contact your Bently Nevada regional training manager to purchase this course.

Purchase includes a full year of access.

E-learning video series:

This course covers key troubleshooting techniques for the 3500 Monitoring System.

Format

Duration: 1 hours

Schedule: flexible

Delivery: E-Course

Audience

- 3500 monitoring system users
- Engineers involved in maintenance and troubleshooting of the 3500 monitoring system
- Instrument technicians

Objectives

- Develop knowledge and skills on troubleshooting the 3500 monitoring system
- Discover key troubleshooting techniques for the 3500 monitoring system

Prerequisites

Recommended Prerequisites:

- 3500 Operation and Maintenance

Additional Requirements: None

ORBIT 60 MONITORING SYSTEM

Discover the critical role of the Orbit 60 monitoring system in machinery monitoring and protection. Acquire hands-on skills to configure and maintain the system, ensuring optimal performance. Master techniques for testing alarms and troubleshooting to effectively manage the system. This course is designed for maintenance professionals and engineers seeking practical insights into advanced monitoring solutions.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led

Audience

- Orbit 60 monitoring system users
- Engineers who maintain and troubleshoot the Orbit 60 monitoring system
- Instrument technician

Objectives

- Explain the role of the Orbit 60 monitoring system in machinery monitoring and protection
- Learn how to configure and maintain the Orbit 60 monitoring system
- Test alarms and troubleshoot the Orbit 60 monitoring system

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

2300 VIBRATION MONITOR – ELEARNING

This online training provides an overview of the 2300 Vibration Monitor hardware and explains how this monitor interacts with software applications such as the Bently Nevada Monitor Configuration software and different versions of System 1.

E-learning video series: The online training takes about 30 minutes to complete.

Format

Duration: 0.5 hours

Schedule: on-demand

Delivery: E-Course, Remote Learning

Audience

- 2300 vibration monitor users
- Instrument technicians

Objectives

- Develop knowledge and skills on 2300 vibration monitor system
- Discover key troubleshooting techniques for the 2300 monitoring system

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

ADRE 408 DSPI/SXP

This hands-on course teaches the skills necessary to ensure the highest quality of data acquisition and presentation using the ADRE diagnostic system. The course begins with the basics in system configuration and continues through advanced database manipulation tools. The skills you learn help you get the most value from ADRE Sxp software and the 408 DSPI.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- ADRE 408 users
- Condition monitoring personnel
- Personnel involved in preventive maintenance

Objectives

- Configure ADRE system to collect machinery data.
- Acquire data effectively for real-time analysis.
- Display vibration and other data types using various plot types for machine condition analysis.
- Edit, document, and store databases for future use.

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

RANGER PRO USING SYSTEM 1

This course equips learners with essential skills to proficiently utilize gateways and Ranger Pro software within the System 1 framework. Participants will gain expertise in the installation, operation, and maintenance of Ranger Pro sensors. The focus is on deploying, operating, and managing the wireless condition monitoring system in industrial plants. The training will specifically address customer-individual gateways, such as those from Honeywell, Yokogawa, or Emerson. This ensures a comprehensive understanding and competency.

Format

Duration: 14 hours

Schedule: 2 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- System 1 users who have purchased Ranger Pro wireless
- Condition monitoring engineers
- Engineers involved in preventive maintenance

Objectives

- Use gateways and Ranger Pro software with System 1, learners will successfully install, operate, and maintain Ranger Pro sensors
- Deploy, operate, and manage Ranger Pro wireless condition monitoring system in industrial plants
- Customer individual gateway will be the subject of training (Honeywell, Yokogawa or Emerson).

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

SYSTEM 1

This course teaches students to use the System 1 software in a variety of practical daily use situations. Workshops demonstrate how the platform can be used efficiently to minimize time spent looking at non-significant data, and to focus on the information that is needed to make good management decisions.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- System 1 platform users
- Reliability engineers
- Condition monitoring personnel
- Personnel involved in preventive maintenance

Objectives

- Manage alarms and generate diagnostic reports with actionable information
- Manage alarm setpoints with statistical tools
- Verify transient and steady state data using various types of plots, analyze, and visualize data to report on machine health and determine appropriate actions
- Maintain healthy S1 databases to ensure operational efficiency

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

SYSTEM 1 FOR PORTABLES

Explore machine condition monitoring essentials in our focused course. Learn key skills like configuring hierarchies, optimizing data collection, and setting alarm parameters. This program equips you to efficiently manage data, handle alarms, and generate actionable diagnostic reports for informed decision-making in machine health. Elevate your expertise quickly for immediate impact in industrial settings.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led

Audience

- System 1 platform users
- Reliability personnel
- Condition monitoring engineers
- Personnel involved in preventive maintenance

Objectives

- Configure and navigate machine and device hierarchy
- Create machine databases and machine templates for data collection
- Configure, display, and manage spectral bands and fault frequencies
- Configure and manage alarm setpoints with statistical tools, data collection routes
- Manage data communication with all the Scouts in the field
- Manage alarms and generate diagnostic reports with actionable information
- Verify, analyze, and visualize data to report on machine health and determine appropriate actions

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

SCOUT200 VIDEO SERIES

These short videos cover the primary aspects of safety, navigation, setup, pairing, and data collection for Bently Nevada's SCOUT200 series portable vibration device.

Format

Duration: 1 hours

Schedule: on-demand

Delivery: E-Course, Remote Learning, Video Course

Audience

- Portable users
- Reliability personnel
- Condition monitoring engineers
- Personnel involved in preventive maintenance

Objectives

- Discover the primary aspects of safety, navigation, setup, pairing, and data collection for Bently Nevada's SCOUT200 series portable vibration device.

Prerequisites

Recommended Prerequisites:

- System 1 for Portables

Additional Requirements: None

SYSTEM 1 BENTLY PERFORMANCE

Bently Performance software module extends the functionality of Bently Nevada System 1 condition monitoring software to include online monitoring of thermodynamic performance. Learn to harness the power of performance monitoring during this instructor-led class. Includes workshops using your own installation of System 1 or System 1 on cloud-based virtual machines.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- System 1 Users who want to use Bently Performance

Objectives

- Describe the value of monitoring machinery performance.
- Identify the general inputs and expected outputs for performance monitoring on machinery such as pumps, compressors, gas turbines, steam turbines, generators, and turbo expanders.
- Use System 1 Bently Performance to monitor and troubleshoot performance.

Prerequisites

Recommended Prerequisites:

- System 1

Additional Requirements: None

DECISION SUPPORT

Decision Support Fundamentals is for personnel who are new to Decision Support or new to the latest offerings of Decision Support for System 1 v.20.1 or later. The course will provide an overview of decision support systems and benefits, rule deployment, custom rule building, deployment of pre-configured rules, and rule management. Custom rule building will feature how to build timer rules, counter rules and offset rules.

Format

Duration: 14 hours

Schedule: 2 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Customers new to Decision Support for System 1 v20.1 or later
- Reliability personnel
- Condition monitoring engineers
- Personnel involved in preventive maintenance

Objectives

- Install and configure the Decision Support product.
- Identify the major benefits of using Decision Support.
- Deploy rules from the Extraction Database.
- Build and deploy custom rules. Create and deploy interdependent rules and rules with advanced steps.
- Revise and upgrade existing rules.

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration
- System 1

Additional Requirements: None

3500 OPERATION AND MAINTENANCE AND SYSTEM 1

This hands-on course combines 3500 Operation & Maintenance and our System 1 course.

This course is for personnel who operate or maintain a 3500 Monitoring system. It includes an overview of hardware components, how to use the rack configuration software, and maintaining and troubleshooting the system. Workshops include practice with live monitors and racks. A key learning objective is to use the System 1 platform to minimize time spent looking at non-significant data and focus on information required to make good management decisions.

The course can be tailored to specific asset types: hydro, wind, reciprocating compressors, motors, turbines, compressors, and other machinery.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers who maintain and troubleshoot 3500 monitoring systems
- Instrument technicians
- 3500 monitoring system users and System 1 platform users

Objectives

- Explain the role of the 3500 monitoring system in machinery monitoring and protection
- Identify installation conditions affecting the correct operation of proximity transducer systems
- Test monitor alarms and verify channel values in a radial vibration monitor
- Use Bently Nevada configuration software to configure and/or reconfigure the 3500 monitor system
- Discover System 1 and learn how to create, configure, display and manage machine database and alarms
- Use various System 1 software tools and plots to detect subtle changes in asset condition
- View alarms and events in the event manager; Create reports on monitored plant assets

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration
- ISO 18436 Category I – Junior Vibration Analyst

Additional Requirements: None

ORBIT 60 MONITORING SYSTEM AND SYSTEM 1

This course covers the pivotal role of the Orbit 60 monitoring system, addressing installation considerations, alarm testing, and system configuration using Orbit 60 Studio software. Participants will also explore System 1 functionalities, learning to manage machine databases, retrieve data, and create reports for proactive maintenance. The course provides a balanced blend of theory and hands-on experience, ensuring participants are well-prepared to implement and manage efficient machinery monitoring systems. Whether you're new to the field or seeking to enhance your skills, this course offers a concise yet comprehensive foundation in Orbit 60 and System 1 technologies.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Orbit 60 monitoring system and System 1 users
- Engineers involved in maintenance and troubleshooting of the Orbit 60 monitoring system
- Instrument technicians

Objectives

- Explain the role of the Orbit 60 monitoring system in machinery monitoring and protection
- Identify installation conditions affecting the correct operation of proximity transducer systems
- Test monitor alarms and verify channel values in a radial vibration monitor
- Use Orbit 60 Studio software to configure and/or reconfigure the Orbit 60 monitoring system
- Discover System 1 and learn how to create, configure, display and manage machine database and alarms
- Use various System 1 software tools and plots to retrieve data and detect subtle changes in asset condition
- View alarms and events in the event manager; Create reports on monitored plant assets

Prerequisites

Required Prerequisites:

- Fundamentals of Vibration
- ISO 18436 Category I – Junior Vibration Analyst

Additional Requirements: None

Bently Nevada

DIAGNOSTIC COURSES

ADRE 408 DSPI/SXP

This hands-on course teaches the skills necessary to ensure the highest quality of data acquisition and presentation using the ADRE diagnostic system. The course begins with the basics in system configuration and continues through advanced database manipulation tools. The skills you learn help you get the most value from ADRE Sxp software and the 408 DSPI.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- ADRE 408 users
- Condition monitoring personnel
- Personnel involved in preventive maintenance

Objectives

- Configure ADRE system to collect machinery data.
- Acquire data effectively for real-time analysis.
- Display vibration and other data types using various plot types for machine condition analysis.
- Edit, document, and store databases for future use.

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

MACHINERY DIAGNOSTICS METHODOLOGY

The hands-on approach for this course gives students the experience they need to feel confident when taking action at their plant. This is a “must have” course for those who interpret or plan on interpreting machine vibration and position data to determine machine condition.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers who interpret machine vibration and position data to determine machine condition
- Engineers involved in the design, acceptance testing and maintenance of rotating machinery
- Engineers who want to learn about machinery vibration diagnostics

Objectives

- Explain how the fundamentals of machine design and behavior are reflected in the vibration measurements.
- Reduce machine vibration data into usable plot formats.
- Explain which plot formats are best to use in the different stages of machine diagnostics.
- Describe the causes, effects and indicators of the typical machine malfunctions; including recognition of problems such as unbalance, misalignment, rubs, shaft cracks and fluid induced instabilities

Prerequisites

Recommended Prerequisites:

- Fundamentals of Vibration

Additional Requirements: None

RECIPROCATING COMPRESSOR CONDITION MONITORING & DIAGNOSTICS (CMD)

Participants learn about instrumentation used for protection and condition monitoring of a reciprocating compressor, interpret data plots, and identify reciprocating compressor malfunctions. The course includes hands-on workshops with actual case histories.

Format

Duration: 28 hours

Schedule: 4 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Anyone who wants to learn about reciprocating compressor components and mechanics
- Engineers seeking to understand reciprocating compressor performance theory
- Engineers who interpret reciprocating compressor vibration and analyze malfunctions
- Engineers who design, test, and maintain reciprocating machinery

Objectives

- Develop an understanding of the basic components and nomenclature of API-618 reciprocating compressors.
- Learn reciprocating compressor mechanics, performance theory, and recip-specific diagnostic techniques.
- understand the need for monitoring of reciprocating compressors and typical monitoring strategy corresponding to API-618 and API-670 guidelines.
- Comprehend the importance of crank angle reference measurements in recip monitoring and diagnostics.
- Develop a diagnostic strategy (understand plots for PV, rod load, performance indicators, frame vibration, crosshead vibration, cylinder vibration and piston rod monitoring) required for comprehensive monitoring and analysis of reciprocating compressors. Practice the knowledge while diagnosing real-time data from machines.
- Several case studies will be presented throughout the course to visualize the typical malfunctions' signatures.
- Demonstration of Calibration, setup and maintaining Piston Rod Monitoring.

Prerequisites

Recommended Prerequisites:

- Machinery Diagnostics Methodology

Additional Requirements: None

APPLIED DIAGNOSTICS WORKSHOP

This course helps new machinery diagnosticians gain knowledge and confidence. Experienced diagnosticians gain additional insight needed to efficiently solve complex machinery problems. Participants will practice their diagnostics skills on real machines and become more proficient in using System 1 or ADRE systems.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers and technicians who analyze and interpret vibration data
- New machinery diagnosticians who want to gain knowledge and confidence
- Experienced diagnostics people willing to gain additional insight needed to efficiently solve complex machinery problems

Objectives

- Discover the various types of machines and practical application of the malfunction detection methodology taught during the Machinery Diagnostics course
- Practice on real data from the field from different rotating machines and learn about their typical malfunctions
- Analyze actual machine case histories using System 1 or ADRE databases
- Organize data in plot formats believed to be indicative of the machine fault
- Present conclusions and make recommendations

Prerequisites

Recommended Prerequisites:

- Machinery Diagnostics Methodology

Additional Requirements: None

ADVANCED FIELD BALANCING

This high level, multi-instructor-led course gives participants a deep understanding of balancing methods and confidence with hands-on practice on test rotors.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led

Audience

- Machinery diagnosticians
- Startup engineers
- Remote diagnostic center specialists
- Plant engineers that oversee field and shop balancing work

Objectives

- Conduct effective balancing of machine trains in the field: calculation of trials, evaluation of results, decision making
- Select strategy ensuring minimum disruption costs and proper data quality
- Use calculation tools the most applicable to situation, evaluate inputs and outputs and recalculate between balancing methods and data conventions
- Analyze balancing processes to more effectively supervise solution weights installation and troubleshoot data integrity problems

Prerequisites

Recommended Prerequisites:

- Machinery Diagnostics Methodology

Additional Requirements: None

ADVANCED MACHINERY DYNAMICS

Participants use numerous case studies to diagnose and fix problems with real machines. Case histories highlighting vibration documentation, analysis, and machine malfunction corrective techniques are presented throughout the course.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led

Audience

- Engineers who want to advance their machinery vibration diagnostics skills
- Engineers who design, acceptance test, and maintain rotating machinery
- Academic researchers and professors involved in rotor dynamics
- Post graduate engineers

Objectives

- Extend knowledge on machinery diagnostic techniques and rotor dynamics for rotating machinery
- Recognize, explain, and account for effects of complex rotor dynamics interaction of modes, mode shapes, thermal changes, bearing design, torsional vibration and structural modes by using rotor modeling, actual machine data and case history
- Use standard vibration diagnostic tools on machine-simulating rotor kits through demonstration
- Analyze and discuss case histories that highlight the vibration documentation, analysis and machine malfunction corrective techniques.

Prerequisites

Recommended Prerequisites:

- Machinery Diagnostics Methodology
- ISO 18436 Category III – Senior Vibration Analyst

Additional Requirements: None

Bently Nevada

ISO CERTIFICATION COURSES

ASSET RELIABILITY PRACTITIONER [ARP-A]: RELIABILITY ADVOCATE

Improving the reliability of physical assets takes far more than just monitoring their condition, improving lubrication practices, and making some improvements to the maintenance department. To have a truly successful program you must understand how to add value to the organization and thus gain senior management support. You must have the support of the entire organization, not just a small group of evangelistic condition monitoring and reliability experts. You must have a coordinated effort between maintenance, operations/production, engineering, finance, and the reliability group – no more silos. And you must follow a strategy that will enable you to build the program, layer upon layer, to achieve milestones and build on success.

The ARP-A Reliability Advocate program will provide a holistic view of how to improve reliability and plant performance. It will explain the implementation process and all the essential elements necessary to have a truly successful program.

Format

Duration: 21 hours

Schedule: 3 days

Delivery: Classroom, Instructor Led, Live Virtual
Classes, Remote Learning

Audience

- Engineers involved in reliability improvement
- Managers starting or reviving an initiative in reliability improvement
- Personnel who want the MIBoC ED161 Reliability Practitioner international certification

Objectives

- Prepare for the ED161 certification test
- Get a holistic view of how to improve reliability and plant performance
- Understand the implementation process and all the essential elements necessary for a successful program

Additional Requirements: Minimum of six (6) months of work experience in the industry involved in some way with reliability improvement, verified by an independent person

CERTIFICATION

ASSET RELIABILITY PRACTITIONER (ARP)

Global Partner: Mobius Institute



ISO 18436 CATEGORY I – JUNIOR VIBRATION ANALYST

The ISO Category I Vibration Analyst “Basic” course is intended for personnel who are new to vibration monitoring and analysis, or those who wish to get an introduction to vibration analysis, condition monitoring and maintenance practices. The course focuses on periodic, single channel data collection and analysis for condition based maintenance programs. Category I certification requires that you have demonstrated 6 months experience in vibration analysis, completed the course and successfully pass the Category I vibration analyst examination.

The class can be taught in-house or engineers can take it through another party such as MOBIUS or the Vibration Institute.

Format

Duration: 28 hours

Schedule: 4 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- New vibration analysts
- Engineers collecting or analyzing vibration data
- Personnel who want to develop skills in the field of machine condition and vibration analysis
- Personnel who want to get certified to international standards (ISO-18436)

Objectives

- Prepare the participant for the ISO 18436-1 category I certification test
- Learn how to be capable of collecting quality data, and performing basic analysis and data validation
- Develop basic knowledge on vibration analysis and condition monitoring

Additional Requirements: Six months of practical vibration analysis work experience, verified by an independent person

CERTIFICATION

ISO 18436-1 CATEGORY I: JUNIOR VIBRATION ANALYST

Global Partner: Mobius Institute



ISO 18436-1 CATEGORY II – INTERMEDIATE VIBRATION ANALYST

The ISO Category II Vibration Analyst “Intermediate” course is intended for personnel who have at least twelve months vibration analysis experience and a basic understanding of vibration theory and terminology. The course provides an in-depth study of machinery faults and their associated spectrum, time waveform and phase characteristics. Category II certification requires that you have demonstrated 18 months experience in vibration analysis, completed the Category II course and successfully pass the Category II vibration analyst examination, however Category I is not a prerequisite to become certified as a Category II vibration analysts.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers analyzing a range of fault conditions
- Engineers who want to understand balancing and alignment
- Engineers desiring to learn about machinery vibration diagnostic
- Personnel who want to become certified to international standards (ISO-18436)

Objectives

- Prepare the participant for the ISO 18436 category II certification test
- Learn how to be capable of diagnosing a wide range of faults, conducting special tests, and performing precision aligning and balancing machinery

Prerequisites

Recommended Prerequisites:

- ISO 18436 Category I – Junior Vibration Analyst

Additional Requirements: Eighteen (18) months of practical vibration analysis work experience, verified by an independent person

CERTIFICATION

ISO 18436-1 CATEGORY 2: INTERMEDIATE
VIBRATION ANALYST

Global Partner: Mobius Institute



ISO 18436 CATEGORY III – SENIOR VIBRATION ANALYST

The ISO Category III Vibration Analyst “Advanced” course is intended for personnel who have at least two years vibration analysis experience and a solid understanding of vibration theory and terminology. This course is designed for the senior vibration analyst and program manager who must be able to diagnose the widest range of vibration related fault conditions, perform balancing and alignment, and understand, diagnose and correct resonance faults. Category III certification requires that you have demonstrated 36 months experience in vibration analysis, completed the Category III course and successfully pass the Category III vibration analyst examination, and are previously certified as a Category II vibration analyst.

Format

Duration: 35 hours

Schedule: 5 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Engineers confident in spectrum but who want to learn about signal processing, time waveform and phase analysis
- Engineers involved in condition monitoring
- Personnel who want to become certified to international standards (ISO-18436)

Objectives

- Prepare the participant for the ISO 18436 category III certification test
- Learn how to be capable of managing the condition monitoring program, diagnosing the widest range of fault conditions, verifying and correcting resonance problems, performing complex balancing machinery.

Prerequisites

Recommended Prerequisites:

- ISO 18436 Category II – Intermediate Vibration Analyst

Additional Requirements: Thirty six (36) months of practical vibration analysis work experience, verified by an independent person

CERTIFICATION

ISO 18436-1 CATEGORY 3: SENIOR VIBRATION ANALYST

Global Partner: Mobius Institute



ISO 18436 CATEGORY IV EXPERT VIBRATION ANALYST

Vibration Analysts certified to Category IV shall have all the knowledge and capabilities of the lower level categories. They will have a broad technical knowledge and experience of a range of machines, and an in-depth knowledge of a selection of them. They are able to perform signal analysis, including frequency and time domain processing, and they can determine natural frequencies, mode shapes and damping of systems, operating deflection shapes of machines and recommend means for correction.

Category IV analysts can apply vibration theory and techniques (including measurement and interpretation of multi-channel spectral results), basic principles of rotor-bearing dynamics and advanced two-plane balancing.

Format

Duration: 87.5 hours

Schedule: 5 days

Delivery: Blended, Instructor Led, Video Course

Audience

- Engineers who want to transition from being a very good vibration analyst to a vibration super-hero!
- Engineers involved in condition monitoring
- Personnel who want to become certified to international standards (ISO-18436)

Objectives

- Prepare for the ISO 18436 category IV certification test
- Learn how to handle any condition that may be presented, perform any test, and fully understand flexible rotor machinery

Prerequisites

Recommended Prerequisites:

- ISO 18436 Category III – Senior Vibration Analyst

Additional Requirements: Sixty (60) months of practical vibration analysis work experience, verified by an independent person

CERTIFICATION

ISO 18436-1 CATEGORY 4: EXPERT VIBRATION ANALYST

Global Partner: Mobius Institute



ISO 18436-4 CATEGORY I – MACHINE LUBRICANT ANALYST

As a basic training on machinery lubrication and lubricant analysis, this course covers fundamental concepts including lubricating oil, grease, lubricant storage and handling, lubricant application, filtration, and lubricant analysis. Additionally, this training prepares learners for the ICML Machine Lubricant Analyst Level I (MLA I) certification exam.

Format

Duration: 28 hours

Schedule: 4 days

Delivery: Classroom, Instructor Led, Live Virtual Classes, Remote Learning

Audience

- Maintenance engineers and technicians
- Reliability engineers
- Lubricant analysts
- Lubrication engineers

Objectives

- Learn the fundamental concepts of machinery lubrication
- Learn the fundamentals concepts of effective of oil sampling
- Learn the basics of lubricant analysis and result interpretation
- Explain the importance of lubricant analysis in machine reliability
- Prepare for ICML Level I Machine Lubricant Analyst: MLA I (ISO 18436-4, I) certification exam

Additional Requirements: Twelve months of relevant experience

CERTIFICATION

ISO 18436-4 CATEGORY I: MACHINE LUBRICANT ANALYST

Global Partner: International Council for Machinery Lubrication (ICML)



bentlytraining.com



Copyright 2024. Baker Hughes Company. This material contains one or more registered trademarks of Baker Hughes Company and its subsidiaries in one or more countries. All third-party product and company names are trademarks of their respective holders.