

NATCOM TRAINING PROGRAM

ACHIEVE THE
NEXT LEVEL OF
SUCCESS WITH
LEADING_EDGE
ACCREDITED
TRAINING
COURSES

2025



NATCOM

NILE ADVANCED TECHNOLOGY & COMMERCE



**TAKE YOUR ASSET RELIABILITY
MANAGEMENT TO
THE NEXT LEVEL**



TRAINING CALENDAR - 2025

MACHINERY HEALTH MANAGEMENT TECHNOLOGIES

NATCOM, the Authorized Training Center of MOBIUS INSTITUTE, has the pleasure to announce the release of our 2025 training calendar covering the below listed Predictive & Proactive Maintenance Course topics.

NATCOM professional engineers have trained hundreds of engineers and technicians who are now occupying leading and key positions in local and multinational companies in Egypt, Arab Countries, as well as western countries.

NATCOM also conducts tailored in house training courses for companies who wish to train their engineers and technicians at their own premises whether because of the cost associated with training a large number of trainees or due to other work-related matters.

NATCOM engineers providing these training courses are certified, capable, experienced, and acknowledged to be distinguished leaders in this field. They have the knowledge, experience, and talent that helps make the training experience not only useful but also unforgettable. Trainees go out with knowledge that they can apply at work and produce rewarding results to the organizations they work for.

NATCOM Training aids include but not limited to Software and hardware simulators, measuring devices, machine models, application oriented interactive training techniques.

- **Last date for registration and payment in any course: 2 weeks prior to the course start date. Reservation is only accepted when payment is received in full.**
- **Certification Exam fees of Mobius Institute courses (ISO Cat I, II, and III) include the certificate, as well as certification maintenance fees for 5 years. Fees are not refundable in case the student did not pass the qualifying score. Exam Fees MUST be paid 2 weeks prior to the start date of the relevant course (no exceptions).**

For more information, please contact as shown below

يسر شركة ناتكوم بصفتها المركز المعتمد لمعهد موبايوس ان تعلن عن بدء العام التدريبي 2025 وذلك طبقا للدورات الموضحة أدناه.







وقد قامت شركة ناتكوم بتدريب وتأهيل مئات من المهندسين والفنيين الناجحين الذين يشغلون الان مراكز هامة في عظمى الشركات بمصر والدول العربية والغربية

كما تقوم شركة ناتكوم بعقد دورات تدريبية خاصة بمقر الشركات التي تطلب ذلك في حال تواجد عدد كبير من المهندسين والفنيين المراد تدريبهم ويقدم التدريب النظري والعملي مهندسين متخصصين مؤهلين ومعتمدين ولهم من الخبرات الطويلة والقدرات التدريبية والذاتية ما يجعل التدريب فعال ومؤثر وتساعد خبراتهم في جعل الدورات تفاعلية وفرصة حقيقية لنقل العلم والمعرفة في هذا المجال الهام والحيوي بصورة علمية واقعية تسهم في نجاح التطبيق وسائل التدريب: يشمل التدريب استخدام نماذج محاكاة فعلية وأجهزه قياس وتحليل وتطبيقات عملية الامر الذى يحقق الاستفادة القصوى للتدريب اخر موعد للتسجيل وسداد الاشتراك في أي دورة تدريبية هو أسبوعان من موعد بدء الدورة ولا يقبل اشتراك من لم يسدد الرسوم مسبقا بالكامل.

- تكلفة الامتحان التأهيلي لاي من من دورات معهد موبايوس للمستويات الثلاث تشمل الشهادة والرخصة الخاصة بالمستوى ISO CAT I, II & III (فى حالة النجاح)سارية لمدة خمسة سنوات.
- اخر موعد لسداد رسوم الامتحان هو اسبوعان قبل موعد بدء الدورة التأهيلية السابقة للامتحان. هذه الرسوم غير مستردة فى حالة عدم اجتياز الامتحان بنجاح او فى حالة عدم حضور الامتحان.

للمزيد للمعلومات يرجى الاتصال على العناوين كما موضح اسفله

NO	COURSE DESCRIPTION	1 ST HALF 2025		2 ND HALF 2025	
		Course Date	Exam	Course Date	Exam
1	 ISO 18436.2 Category I Vibration Analysis Course, with Optional Certification Exam, Mobius Institute	16 to 18 February	19 February	15 to 18 June	19 June
2	 ISO 18436.2 Category II Vibration Analysis Course, with Optional Certification Exam, Mobius Institute	11 to 14 May	15 May	7 to 10 September	11 September
3	 ISO 18436.2 Category III Vibration Analysis Course, with Optional Certification Exam, Mobius Institute	13 to 16 July	17 July	2 to 5 November	6 November
4	 Practical and Effective Lubrication Management for Asset Reliability Best Lubrication Practices Course with Certification	20 to 22 July	Included	----	----
5	 Uncovering the Mystery of Machinery Vibration , for Managers Only	2 to 3 February	None	14 to 15 September	None
6	 Introduction to Vibration Course , for technicians and maintenance engineers.	22 to 23 June	None	14 to 15 December	None
7	 Precision Shaft Alignment _ (Hands-On) Training Course	23 to 24 February	None	19 to 20 October	None


NO	COURSE DESCRIPTION	1 ST HALF 2024		2 ND HALF 2024	
		Course Date	Exam	Course Date	Exam
8	 Balancing of Rigid Rotors _ (Hands-On) Training Course	25 to 26 February	None	21 to 22 October	None
9	 Diagnosing Vibration Problems on Fluid Film Bearing Machines	January	---	01 to 03 October	None
10	 Centrifugal Compressors Control Basics _ Anti-Surge and Capacity Control	Please Call to Inquire	None	Please Call to Inquire	None
11	 Electrical Motor Testing & Diagnostics _ Diagnosing anomalies of the electrical motors and the power circuits.	27 to 29 July	None	23 to 25 November	None
12	 Reciprocating Compressors Analysis _ Diagnosing problems of reciprocating compressors	18 to 19 May	None	09 to 10 November	None
13	 Reciprocating Engines Analysis _ Diagnosing problems of reciprocating compressors and engines	25 to 26 May	None	16 to 17 November	None

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ISO 18436.2 CATEGORY I _ JUNIOR VIBRATION ANALYST

VIBRATION ANALYSIS COURSE, with OPTIONAL CERTIFICATION EXAM
ACCREDITED TO THE INTERNATIONAL ISO/IEC 17024 FROM MOBIUS
INSTITUTE BOARD of CERTIFICATION™ [MIBoC]

 **COURSE DURATION: 3 DAYS_ 30 hrs. + 1 DAY EXAM**

 **There are so many benefits to taking this course. You will learn...**

● Maintenance Practices

- Reactive, preventive, condition-based, proactive
- How to decide between them

● Condition Monitoring

- Why it works
- Ultrasound, infrared, oil analysis, wear particle analysis, and electric motor testing

● Principles of Vibration

- Waveforms
- Metrics: overall levels, RMS, Pk, Pk-to-Peak, and crest factor

● Introduction to Vibration Measurement

- Vibration sensors: displacement, velocity, acceleration
- Vibration units
- Mounting: where and how
- Naming conventions
- Repeatability and quality
- Vibration axes: V, H, A, R, and T
- What are “routes” and how do you create them?

- Detecting and avoiding poor data

● An Introduction To The Time Waveform

● An Introduction To The Spectrum

- An introduction to forcing frequencies

● A Brief Introduction to Phase

● Signal processing (just the absolute basics)

- A quick tour of your analyzer settings
- Fmax
- Resolution
- Spectral averaging

● Vibration Analysis

- The spectrum analysis process

● What Is Resonance – A Quick Introduction

● Diagnosing Common Fault Conditions

- Unbalance
- Misalignment
- Rolling element bearing failure
- Looseness
- Resonance

● Setting Alarm Limits.

FORMAT

- Live public course
- On-site course
- Virtual online course.

EXAM

- Two hours
- 60 multiple-choice questions
- 70% passing grade.

CERTIFICATION REQUIREMENTS

- Training course completed -
- 6-months of work experience, verified by an independent person.
- Pass the exam
- Valid for 5 years

WHO SHOULD ATTEND?

- Collect vibration data
- Validate that the data is good
- Begin to perform basic analysis
- Use the training and certification as the start of a new and rewarding career as a vibration analyst


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ISO 18436.2 Category II _ INTERMEDIATE VIBRATION ANALYST

VIBRATION ANALYSIS COURSE, with OPTIONAL CERTIFICATION EXAM
ACCREDITED TO THE INTERNATIONAL ISO/IEC 17024 FROM MOBIUS
INSTITUTE BOARD of CERTIFICATION™ [MIBoC]

 **COURSE DURATION: 4 DAYS_ 38 hrs. + 1 DAY EXAM**

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

● Review of Vibration Basics

- 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

● 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

📌 CERTIFICATION REQUIREMENTS

- Training course completed
- 18-months of vibration analysis experience, verified by an independent person
- Pass the exam
- Valid for 5 years.

📌 FORMAT

- Live public course
- On-site course
- Virtual online course.

📌 EXAM

- Three hours
- 100 multiple-choice questions
- 70% passing grade


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ISO 18436.2 Category III _ SENIOR VIBRATION ANALYST

VIBRATION ANALYSIS COURSE, with OPTIONAL CERTIFICATION EXAM
ACCREDITED TO THE INTERNATIONAL ISO/IEC 17024 FROM MOBIUS
INSTITUTE BOARD of CERTIFICATION™ [MIBoC]

 **COURSE DURATION: 4 DAYS_ 38 hrs. + 1 DAY EXAM**

 There is a great deal to learn, but it will help you to perform your role with confidence. The topics covered in this course include:

● Signal Processing

- Filters: Low pass, band pass, high pass, band stop
- Sampling, aliasing, dynamic range
- Signal-to-noise ratio
- Resolution, Fmax, data collection time
- Averaging: linear, overlap, peak hold, time synchronous
- Windowing and leakage
- Order tracking
- Cross-channel measurements
- Correlation and coherence

● Time Waveform Analysis

- Collecting Data – Ensuring You Have the Correct Setup
- When should you use time waveform analysis?
- Diagnosing unbalance, misalignment, bent shaft, eccentricity, cocked bearing, resonance, looseness, and other conditions
- Phase analysis
- Collecting data
- Bubble diagrams

- Diagnosing unbalance, misalignment, bent shaft, eccentricity, cocked bearing, resonance, looseness, and other conditions

● Dynamics (Natural Frequencies and Resonance)

- Natural frequencies and resonances
- Mass, stiffness, and damping
- SDOF and MDOF

● Testing for Natural Frequencies

- Run-up coast down tests
- Bode plots and Nyquist (polar) plots
- Impact and bump tests

● Operating Deflection Shape (ODS) analysis

- Can we prove the existence of a natural frequency?
- Visualizing vibration
- Setting up the job
- Collecting phase readings correctly
- Interpreting the deflection shape
- Using Motion Amplification

● Modal Analysis and Intro to FEA

- How does modal analysis differ from ODS?
- How does Finite Element Analysis (FEA) differ from modal analysis?
- A quick review of the modal testing process

● Correcting Resonances

- The effect of mass and stiffness
- Beware of nodal points
- Adding damping
- A 'trial and error' approach
- A 'scientific' approach Isolation
- Tuned absorbers and tuned mass dampers
- Rolling Element Bearing Fault Detection
- Why do bearings fail?
- Cocked bearing, sliding on the shaft or inside the housing, looseness
- Bearing frequencies and what to do when you don't have all the details
- The four stages of bearing degradation
- Ultrasound
- High-frequency detection techniques
- Shock Pulse, Spike Energy, Peak Vue, and other techniques
- Demodulation/enveloping
- Selecting the correct filter settings
- Spectrum analysis
- Time waveform analysis
- Low-speed bearings

● Journal Bearing Fault Detection

- What are journal bearings?
- Measuring displacement
- Introduction to orbit plots
- Using your analyzer to acquire orbit plots
- Introduction to centerline diagrams
- Eccentricity ratio
- Glitch removal
- How the orbit changes with pre-load, unbalance, misalignment, instabilities, oil whirl and whip

● Electric motor testing

- How do motors work?
- Diagnosing a range of fault conditions: eccentric rotor, eccentric stator, soft foot, phasing, broken rotor bars, rotor bar, and stator slot pass frequencies
- Motor current analysis

● Pumps, Fans, and Compressors

- Unique fault conditions
- Flow turbulence, recirculation, cavitation

● Gearbox Fault Detection

- Spectrum analysis versus time waveform analysis
- Wear particle analysis
- Gear mesh, gear assembly phase frequency (and common factors)
- Tooth load, broken teeth, gear eccentricity and misalignment, backlash and more

● Corrective Action

- General maintenance repair activities
- Review of the balancing process and ISO balance grades
- Review of shaft alignment procedures

● Running A Successful Condition Monitoring program

- Defining the 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

🔗 CERTIFICATION REQUIREMENTS

- Training course completed.
- 36-months of vibration analysis experience, verified by an independent person
- Pass the exam.
- Valid for 5 years..

🔗 FORMAT

- Live public course
- On-site course
- Virtual online course.

🔗 EXAM

- Three hours
- 100 multiple-choice questions
- 70% passing grade

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PRACTICAL & EFFECTIVE LUBRICATION MANAGEMENT FOR ASSET RELIABILITY

Rotating Equipment Lubrication Best Practices Course with Certification for Course Completion from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

COURSE DESCRIPTION

This course on Rotating Equipment Lubrication provides the most advanced and up-to-date knowledge available to assist production plants keep their equipment healthy and running and at the same time keep operating and maintenance cost to absolute minimum. Today's rotating equipment, due to high production demands and extreme loading conditions, provide a stressful environment for lubes to survive in. Formulations are evolving, Equipment duty cycles are changing. This course provides the latest technical information, practical lube care and management solutions to help navigate through these changes and challenges.

Leading operations view their lubricants as assets rather than consumables. This change in the mindset results in longer lasting high-performance lubes – translating to increased reliability and lower operating and maintenance costs. This course is the catalyst to change how your company views and manages lubricants and teaches you best rotating equipment lubrication care and management practices that will lead you to achieve highest reliability and economic operation of your important production assets.

COURSE OUTLINES

- How to select the best oil for your application using performance data.
- Why oils fail, how you can detect this failure mode and what you can do to minimize lube-related failures and downtime.
- Asset Condition Monitoring from lubricant angle.
- Monitoring oil cleanliness level and the up-to-date technologies for controlling water and solid contamination.
- The recommended oil cleanliness level for different application.
- Correlation between cleanliness codes and microscopic photo analysis.
- Oil sampling best practices.
- What oil analysis tests that provide the biggest bang-for-your-buck and how to best optimize your asset condition monitoring program.
- Types and sources of contaminants, both solids and liquids, and their negative effects on lubricant and asset.

- Solid Contaminants, sources, types, effects on oil & machine.
- Varnish (a soft contaminant), how it gets formed, what can be done to eliminate related concerns.
- How you can double or triple the life of your oils.
- When do you really need to change the oil?
- Keeping your machine and lubricant healthy, solutions to contamination control (both solids and liquids)
- When to consider flushing and best practices for oil changes.
- Flushing or cleaning?
- How proper lubricant management can increase your bottom line.
- How to determine the end of your oil's life, and what is the measure that can reflect the oil life.
- The up-to-date technology for on-line oil condition monitoring.
- Field testing of lubricants, and how to reduce the external oil analysis while maximizing lubrication efficiency and machine health.
- Hands-on training on field testing of oils.

📌 **FORMAT**

- Live public course

📌 **EXAM**

- The course includes exam
- 70% passing grade

📌 **WHO SHOULD ATTEND?**

- Rotating Equipment / Plant Personnel Maintenance Managers
- Condition Monitoring Specialists Reliability Engineers / Reliability Experts Plant Managers / Operations Managers Oil Analysis Laboratories
- Lubrication Engineers
- Filtration Specialists

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UNCOVERING THE MYSTERY of MACHINERY VIBRATION, for Managers Only

TRAINING COURSE for MANAGERS from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

📌 The course is beneficial for PDM managers, maintenance managers, process, production managers, electrical managers, etc. who are not necessary to be deeply involved in vibration analysis, but it's important that they have a general knowledge about vibration, analyzers capabilities and all relating technologies to PDM.

📌 COURSE OUTLINES

- The Vibration Information Rich Signal
- Vibration Terminologies
- Vibration Units
- Vibration Transducers
- Vibration Measuring Systems
- Establishing A New Reliability Program
- Vibration Characteristics of Rotating Equipment Verses Reciprocating Vibration
- Torsional Vibration
- Portables Vs. Online Analyzers
- Published / Calculated Alarm Limits
- Trainings and Certification

📌 FORMAT

- Live public course
- On-site course
- Virtual online course.

📌 WHO SHOULD ATTEND?


- PDM managers.
- Maintenance managers
- Electrical managers
- Process production managers
- Production managers

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UNDERSTANDING MACHINERY VIBRATION, For NON-CONDITION MONITORING ENGINEERS

AN INTRODUCTORY VIBRATION ANALYSIS COURSE ASSIGNED TO FORPERSONEL OTHER THAN CONDITION MONITORING ENGINEERS from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

 The course is beneficial for any personnel other than condition monitoring engineers who their jobs are indirectly linked to vibration. This is an introductory course for vibration terminologies and concepts. This course teaches vibration terms when reading vibration analysis reports and measurements.

COURSE OUTLINES

● What Is Vibration?

- Vibration terminologies.
- Vibration units.

● Vibration Technical Components

- Overall vibration level
- Band overall (analysis parameters) level.
- Pk-Pk time waveform
- Crest factor
- Introduction to frequency domain (spectrum)
- Spectrum zones
- Spectrum zones vibration sources

● Common Machine Faults:

- Unbalance.
- Misalignment.
- Looseness.
- Anti-friction bearing faults.
- Gears faults.
- Belt faults.

● Machine Site Balancing Job Procedures and Challenges

● Machine Shaft Alignment Job Procedures and Challenges

● Vibration Alarm Limits

- Published alarm limits
- Calculated alarm limits

📌 FORMAT

- Live public course
- On-site course .

📌 WHO SHOULD ATTEND?

- Maintenance engineers
- Electrical engineers
- Production engineers
- Process production engineers



PRECISION SHAFT ALIGNMENT TRAINING COURSE

HANDS_ON TRAINING COURSE FOR SHAFT ALIGNMENT with Certification for Course Completion from NATCOM

COURSE DURATION: 2 DAYS_ 14 hrs.

THIS COURSE OFFERS A PRACTICLE HANDS-ON TRAINING OF HOW TO ALIGN MACHINE USING DIAL INDICATORS OR LASER ALIGNMENT SYSTEMS. THE COURSE WILL INCLUDE

- **Alignment Introduction**
 - Benefits of Good Machinery Alignment
 - Consequences of Defect Alignment
 - Four Basic Ingredients Necessary to Insure Alignment Success
 - Detecting Misalignment
- **Alignment Conventions and Common Terms**
 - Stationary & Movable Components
 - Clock Positions
 - Abbreviations
 - Positive Offset/Angularity – Vertical Plane
 - Positive Offset/Angularity – Horizontal Plane
 - Positive Movement – Vertical/ Horizontal Plane
- **Determining the alignment state**
 - Offset & Angularity (GAP)
 - How to Measure Angularity?
 - Visualizing Tolerance
 - Spacer Coupling and Tolerances
 - Published Tolerances
- **Preliminary Alignment Checks**
 - Preliminary Alignment Checks
 - Foundation and Baseplate Check
 - Dial Indicators Check
 - Damaged or Worn Components
 - Excessive Runout Conditions
 - High/Low Spots Vs. Hills and Valleys
- **Machine Housing to Base Plate Interface Problems**
 - Verifying that the Soft Foot Has Been Eliminated
- **Understanding Dial Indicators**
 - Dial indicators related problems
- **The Face – Rim Dial Indicator Method**
 - The Rim – Face Dial Indicator Method
 - Accuracy Issue – Setup Problems
 - 1) If Two Shafts Rotate Simultaneously
 - Graphical Method
 - 2) If One Shaft Only Rotates
 - ✂ Hands-on training on a demo machine
- **The Reverse Dial Method**
 - The Reverse Dial Method Introduction
 - The Reverse Dial Procedures
 - Reverse Dial Procedure Two Dials in the Opposite Direction
 - Reverse Dial Procedure Two Dials in the Same Direction
 - ✂ Hands-on training on a demo machine

Dynamic and Thermal Movement

- “Off-Line to Running” OL2R
- Manufacturer’s Supplied Thermal Growth
- How to compensate manufacturer’s offset and angularity thermal growth in alignment?

• Laser Shaft Alignment Systems

- Laser Detector Systems
- Suggestion for Successful Use of Your Laser Alignment System
- Advantages of Laser Measurement Systems
- ✂ Hands-on training on a demo machine

📌 FORMAT

- Live public course
- On-site course .

📌 WHO SHOULD ATTEND?

- Condition monitoring engineers
- Maintenance engineers
- Electrical engineers
- Technicians



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RIGID ROTORS BALANCING TRAINING COURSE

**✂ HANDS_ON TRAINING COURSE FOR RIGID ROTORS ON SITE
BALANCING with Certification for Course Completion from NATCOM**

📖 COURSE DURATION: 2 DAYS_ 14 hrs.

📌 THE COURSE IS COVERING BALANCING OF RIGID-ROTORS, SINGLE AND TWO PLANE BALANCING. THE COURSE WILL INCLUDE;

- Types of Unbalance
- Adding and Subtracting Vectors
- Absolute phase measurement in balance
- Confirming balancing
- Balancing job preparation
- Deciding balancing job- single or two plane balancing?
- Single plane balancing – representing on polar diagram
- Single plane balancing procedures
- Two plane balancing procedures
- Splitting and combining weights
- Balancing overhung rotors
- The Four-Runs balancing method
- Balancing Grades.
- ✂ Hands-on training on a demo machine _ two plane balancing job using AMS; Machinery Health® Manager 2140 balancing program

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📌 FORMAT

- Live public course
- On-site course .

📌 WHO SHOULD ATTEND?

- Condition monitoring engineers
- Maintenance engineers
- Electrical engineers
- Technicians

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DIAGNOSING VIBRATION PROBLEMS ON FLUID FILM BEARING MACHINES

TRAINING COURSE FOR ANALYZING VIBRATION OF FLUID FILM BEARINGS with Certification for Course Completion from **NATCOM**

 **COURSE DURATION: 3 DAYS_ 24 hrs.**

- Fluid film bearings machines are unique in their diagnostics techniques because of the way they are structured.
- In this course, trainees will learn how to recognize and identify root causes of machinery faults such as rotor imbalance, rubs, fluid induced instabilities, cracked rotors, etc., by interpreting vibration signals.
- Trainees will experience a live demonstration using rotor kits of some of the common machinery faults to practice their skills.
- Some of the most valuable case histories will be discussed in class to enhance trainees understanding of the topic.

NATCOM

FORMAT

- Live public course
- On-site course .

WHO SHOULD ATTEND?

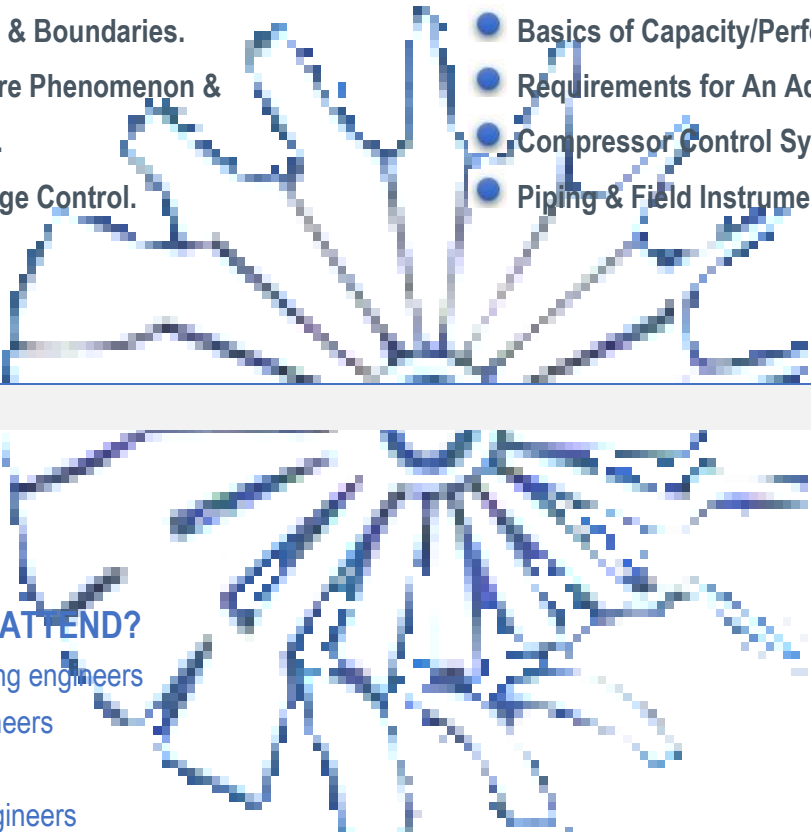
- Condition monitoring engineers
- Maintenance engineers
- Senior vibration analysis engineers

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CENTRIFUGAL COMPRESSORS CONTROL BASICS_ ANTI-SURGE AND CAPACITY CONTROL

TRAINING COURSE FOR CENTRIFUGAL COMPRESSORS CONTROL
BASICS with Certification for Course Completion from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

- 
- Compressor Maps & Boundaries.
 - Understanding Surge Phenomenon & Its Consequences.
 - Basics of Anti-Surge Control.
 - Basics of Capacity/Performance Control.
 - Requirements for An Adequate Compressor Control System.
 - Piping & Field Instruments Best Practices.

FORMAT

- Live public course
- On-site course .

WHO SHOULD ATTEND?

- Condition monitoring engineers
- Maintenance engineers
- Process engineers
- Instrumentation engineers

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Electrical Motor Testing & Diagnostics

TRAINING COURSE FOR ELECTRICAL MOTORS CONDITION MONITORING FOR PREDICTIVE MAINTENANCE INDUSTRY with Certification for Course Completion from NATCOM



COURSE DURATION: 3 DAYS_ 21 hrs.

✦ Electrical faults are responsible for nearly 50% of all motor failures, taking a proactive approach to these problems becomes a necessity. This course will cover the predictive maintenance technology which provides comprehensive, portable motor testing and diagnostics.

● Off-line Motor Testing:

- Quality Assurance (QA) testing of new and refurbished motors.
- Trending motor health over time.
- Troubleshooting and narrowing down the problem to a specific component or section of the motor circuit when a problem exists in a motor circuit.
 - Standard tests; power and motor circuit anomalies check
 - Air gap check; Static and dynamic air gap problems
 - Insulation Check; polarization index and step voltage tests

● On-line motor testing for routine condition monitoring and trending:

- Power quality evaluation
- Power circuit and motor circuit evaluation
- Rotor condition evaluation.
- Eccentricity issue evaluation

● Alarm limits for acceptance testing and trending

FORMAT

- Live public course
- On-site course .

WHO SHOULD ATTEND?

- Condition monitoring engineers
- Maintenance engineers
- Electrical engineers
- Senior vibration analysis engineers

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Reciprocating Compressors Analysis

TRAINING COURSE FOR ANALYZING VIBRATION OF RECIPROCATING COMPRESSORS with Certification for Course Completion from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

✦ Reciprocating Equipment are one of the most serious and expensive assets in the plant they are sometimes unobserved by condition monitoring team, simply because their typical and primary CBM tool (portable vibration analyzer for rotating machinery) is not well suited for reciprocating machines.

The main goal of reliability and condition monitoring team is not only to protect their reciprocating machines from catastrophic failure by using tradition protection system and vibration overall trending, but also predict, diagnose any abnormality in the equipment and sustain reliability which could be achieved by monitoring all machine components simultaneously, recording the performance, operation parameters, vibration and overall health.

● Compressor Analysis

- Determine the mechanical condition of each compressor valve
- Identify flow restrictions or excessive pressure drops
- Find leaking rings
- Detect loose piston on the rod
- Determine if the pockets are leaking
- Evaluate the effectiveness of the capacity control and unloader devices
- Locate external process leaks including packing
- Survey the bearings, pins and bushings for extra clearance
- Measure the HP, capacity and efficiency of each cylinder
- Determine the effective operating clearance volume
- Other vibration related problems (looseness, alignment, etc.)

📌 FORMAT

- Live public course
- On-site course .

📌 WHO SHOULD ATTEND?

- Condition monitoring engineers
- Maintenance engineers
- Senior vibration analysis engineers

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Reciprocating Engines Analysis

TRAINING COURSE FOR ANALYZING VIBRATION OF RECIPROCATING ENGINES with Certification for Course Completion from NATCOM

 **COURSE DURATION: 2 DAYS_ 14 hrs.**

↳ Reciprocating Equipment are one of the most serious and expensive assets in the plant they are sometimes unobserved by condition monitoring team, simply because their typical and primary CBM tool (portable vibration analyzer for rotating machinery) is not well suited for reciprocating machines.

The main goal of reliability and condition monitoring team is not only to protect their reciprocating machines from catastrophic failure by using tradition protection system and vibration overall trending, but also predict, diagnose any abnormality in the equipment and sustain reliability which could be achieved by monitoring all machine components simultaneously, recording the performance, operation parameters, vibration and overall health.

● Engine Analysis

- Determine the proper analyzer parameters to sample on an engine
- Understand the theory of an internal combustion engine
- Identify normal pressure, vibration and ignition patterns on two (2) and four (4) stroke engines
- Verify corrupt data and the methods on fixing the data
- Evaluate the pressure data on the Engine Report to determine performance issues.
- Understand the collection and analysis of primary and secondary ignition.
- Recognize basic engine issues like:
 - Unbalance cylinder Peak Firing Pressures (PFP).
 - Performance issues in the pressure traces
 - Excessive horsepower/fuel cost calculations
 - Leaking piston rings and valves
 - Improper adjustments/wear in the valve train
 - Spark plug, wire, coil and primary ignition faults

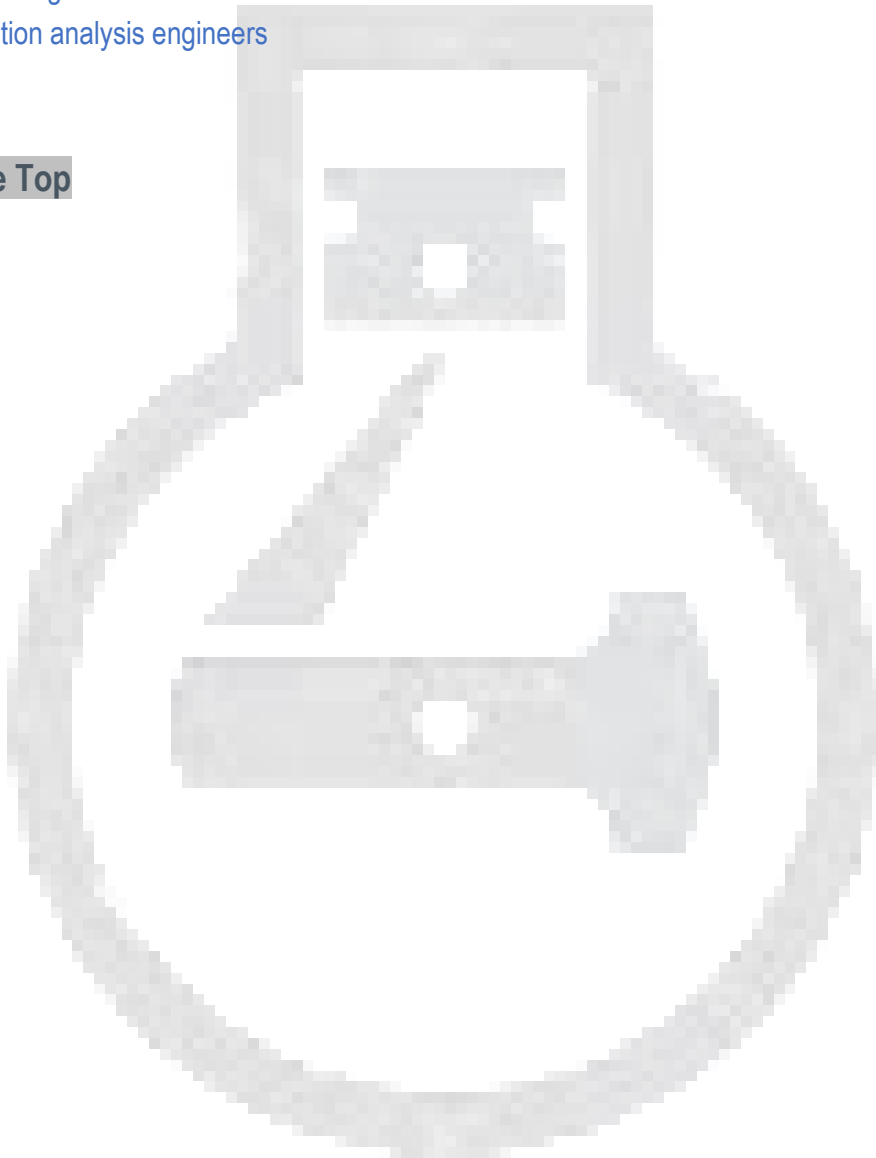
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Accelerate Your Analytical Skills

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We look forward to your active participation

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