



*Training Course:
CAT II Vibration Analysis*

*14 - 18 April 2025
Liverpool (UK)*

Training Course: CAT II Vibration Analysis

Training Course code: IT235434 From: 14 - 18 April 2025 Venue: Liverpool (UK) - Training Course Fees: 5775 € Euro

Introduction

The CAT II Vibration Analysis Training Program is designed to equip participants with advanced knowledge and skills in vibration analysis. Over the course of five days, participants will gain a comprehensive understanding of vibration principles, data collection techniques, signal processing, and advanced analysis methods. This program is crucial for professionals responsible for machinery condition monitoring, fault diagnosis, and predictive maintenance. By the end of the course, participants will be able to effectively implement vibration analysis techniques to improve machinery reliability and performance.

Objectives

- **Understand the Fundamentals:** Gain a solid understanding of basic vibration principles, terminology, and the importance of vibration analysis in maintenance and reliability.
- **Master Data Collection:** Learn best practices for collecting vibration data, including the use of different sensors and data acquisition systems.
- **Analyze Vibration Data:** Develop skills in both time-domain and frequency-domain analysis, and understand how to apply signal processing techniques such as FFT.
- **Identify and Diagnose Faults:** Learn to identify common vibration patterns and faults in machinery, including bearings and gearboxes.
- **Apply Advanced Techniques:** Understand advanced signal processing methods and perform modal and resonance analysis.
- **Implement Monitoring Programs:** Develop and implement effective vibration monitoring and condition-based maintenance programs.
- **Solve Real-World Problems:** Apply theoretical knowledge to real-world case studies, interpreting complex vibration issues and developing solutions.

Target Audience

- **Maintenance Engineers:** Professionals responsible for the maintenance and reliability of machinery who want to enhance their skills in vibration analysis.
- **Reliability Engineers:** Individuals focused on improving machinery reliability and performance through

advanced diagnostic techniques.

- **Condition Monitoring Technicians:** Technicians involved in the regular monitoring and maintenance of machinery who seek to upgrade their diagnostic capabilities.
- **Predictive Maintenance Specialists:** Professionals implementing predictive maintenance strategies and looking to integrate advanced vibration analysis into their toolkit.
- **Mechanical Engineers:** Engineers who design and maintain mechanical systems and seek a deeper understanding of vibration-related issues.
- **Plant Managers and Supervisors:** Leaders overseeing maintenance and reliability teams, aiming to improve their team's diagnostic and problem-solving skills.
- **Consultants:** Consultants providing services in machinery maintenance and reliability, looking to expand their expertise in vibration analysis.

Training Program Outline

Day 1: Introduction to Vibration Analysis

- Welcome and course overview
- Importance of vibration analysis in maintenance and reliability
- Basic principles of vibration
- Introduction to vibration terminology
- Types of vibration sensors and their applications

Day 2: Data Collection and Signal Processing

- Best practices for data collection
- Understanding frequency, amplitude, and phase
- Basics of signal processing and filtering techniques
- Time-domain vs frequency-domain analysis
- Introduction to Fast Fourier Transform FFT

Day 3: Vibration Analysis Techniques

- Overview of common vibration analysis techniques
- Understanding and identifying common vibration patterns and faults
- Bearing analysis and fault detection
- Gearbox vibration analysis

Day 4: Advanced Vibration Analysis

- Advanced signal processing techniques e.g., envelope analysis, time-synchronous averaging
- Modal and resonance analysis
- Vibration severity criteria and standards e.g., ISO standards
- Condition monitoring and trending

Day 5: Practical Applications and Case Studies

- Interpreting and diagnosing complex vibration issues
- Case studies of real-world vibration problems and solutions
- Developing and implementing a vibration monitoring program
- Review and final assessment
- Q&A session and course wrap-up

Registration form on the Training Course: CAT II Vibration Analysis

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3 Oudai street, Aldouki,
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