

Integrated Condition Monitoring

Vibration Analysis Fundamentals



Course Number

EK-ICM101

Course Purpose

This course is designed for the new user of vibration analysis or predictive maintenance instrumentation or for the individual that desires to become more familiar with the basics of vibration. The relationship between the mechanical condition of machinery and vibration is presented. This background helps show how vibration detection and analysis can be used in a cost effective program to identify machinery problems and schedule repairs to avoid costly machine downtime.

COURSE AGENDA

DAY 1

- Introduction to Vibration Technology
- Characteristics of Vibration
- Relating Vibration Frequency, Amplitude and Phase to Machine Condition
- Review of Severity Charts
- Differences between Displacement, Velocity and Acceleration

DAY 2

- Instruments for Vibration Detection and Analysis
- Transducer Selection and Mounting Methods
- Introduction to Vibration Analysis
- Identifying the Most Common Machinery Problems

DAY 3

- Introduction to Dynamic Balancing
- Calculating Trial and Correction Weights
- Implementing a Predictive Maintenance Program

WHO SHOULD ATTEND

Maintenance supervisors, mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery should attend this course. This course also covers the prerequisite knowledge needed to attend and be successful in the Vibration Analysis 1 course (Course No. EK-ICM201).

PREREQUISITES

There are no prerequisites for this course.

STUDENT MATERIALS

To enhance and facilitate each student's learning experience, the following materials are provided as part of the course package:

- Student Manual, which contains the key concepts, definitions, and examples presented in the course, including:
 - Vibration Analysis, with proven methods for identifying the most common day-to-day machinery problems
 - Vibration Severity and Spectral Band Alarm Charts, which summarize acceptable levels of vibration and how to establish alarms to detect excessive vibration on machines
 - Dynamic Balancing, providing a detailed introduction to dynamic balancing techniques including single and two plane balancing

HANDS-ON PRACTICE

Hands-on practice is a necessary part of learning and this course offers hands-on opportunities for fundamental vibration measurements. New users of vibration analysis or predictive maintenance systems will realize significant benefits from the practical hands-on measurement exercises using modern data collectors, or analyzers. Students will gain practical experience by making example measurements using the different units of measure and frequency ranges. A balancing exercise completes the program and allows the students to use the concepts provided in the course to achieve a balance solution.

NEXT LEARNING LEVEL

Once students have mastered the fundamental skills covered in this course, they will have the knowledge and skills necessary to attend the next level of Integrated Condition Monitoring technology or product training. In particular, this course will benefit those students enrolling in the Vibration Analysis Level: 1 course (Course No. EK-ICM201).

COURSE LENGTH

This is a three-day course.

TO REGISTER

To register for this or any other Rockwell Automation training course, contact your local authorized Allen-Bradley® Distributor or your local Sales/Support office for a complete listing of courses, descriptions, prices, and schedules.

You can also access course information via the Web at <http://www.rockwellautomation.com/training>

To be respectful of the environment, Rockwell Automation is transitioning some of its training courses to a paperless format. Students are asked to complete downloads and bring personal devices to these classes. A full list of digital/paperless courses is currently available through your local distributor.

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