

# Integrated Condition Monitoring

## Vibration Analysis: Level II Course Description

### COURSE AGENDA

#### *Day 1*

- Brief Review of Vibration Analysis: Level I
- Digital Data Acquisition Principles and FFT Processing for Reliable Spectral Analysis
- Introduction to Natural Frequency Test Methods

#### *Day 2*

- Enhanced Vibration Diagnostics using Phase Analysis and Cascade Diagrams
- Concentrated Vibration Signature Analysis using the Illustrated Vibration Diagnostic Chart

#### *Day 3*

- Introduction to Narrowband Envelope (Statistical) Alarms
- How to Refine Overall and Band Alarm Levels using Proven Statistical Methods
- Introduction to Isolation and Damping



### COURSE NUMBER: EK-ICM261

#### *Course Purpose*

This seminar is designed to advance the knowledge of vibration analysts having 1 to 3 years of experience. The course begins with a brief review of Vibration Analysis: Level I topics and then moves to more in-depth applications of the Illustrated Vibration Diagnostic Chart. Advanced alarm setting techniques based on statistical analysis are explained for overall and band alarms. Advanced measurement techniques including natural frequency testing and high frequency envelope signal analysis are covered.

### **Who Should Attend**

This course will advance the expertise of mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery. This course also covers the prerequisite knowledge needed to attend and be successful in the *Vibration Analysis: Level III* course (Course No. EK-ICM301).

### **Prerequisites**

- To successfully complete this course, students should have 12 months or more of field experience along with previous attendance to the *Vibration Analysis: Level I* (EK-ICM201) or similar course.

### **Technology Requirements**

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending 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:
  - *Alarm Settings*, with proven methods for specifying statistical overall, spectral band and narrowband alarm levels and frequencies.
  - *Illustrated Vibration Diagnostic Chart*, which summarizes the diagnosis of over 40 mechanical and electrical problems, based on analysis of spectrum and phase data.
  - *Real-World Case Histories*, with methodology, before and after data, and conclusions. These 280+ pages present cases covering unbalance, looseness, belt drive, bearing, misalignment, gear, electrical problems and more.

### **Certification Testing**

Optional certification testing is available on the morning of day four. The test will provide the student with a means to benchmark their knowledge in vibration and predictive maintenance concepts. Many people who have taken this test to date have said the test was a learning experience in itself, and served to cement the course topics together. Although open book, the test is not easy by any standard and requires the student listen to the class lecture and study the test material provided.

### **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 III* course (Course No. EK-ICM301).

### **Course Length**

This is a three-day course with an optional half-day test on the fourth day.

### **Course Number**

The course number is EK-ICM261.

### **IACET CEUs**

CEUs Awarded: 2.1



### **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>

**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

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