



Work Identification

WI205

Vibration Troubleshooting for Reliability

Recommended for

All maintenance and operations personnel interested in improving machinery reliability through identification, correction, and the prevention of failures. Although a basic understanding of vibration is helpful, the practical nature of the material allows all participants to gain a new understanding of their machinery and how they can positively impact reliability.

Course objective

To understand the cause and effect relationships between maintenance practices and the resulting vibration and reliability performance of industrial machinery utilizing sound and practical inspection and troubleshooting practices. Elevate basic condition monitoring programs and practices to provide true solutions to problems over and above problem detection.

2009 course schedule

April 14–16	Houston, TX
Oct. 13–15	Atlanta, GA

2009 tuition

Public classes	\$1,295
On-site	
per class	\$14,995
# people	16
17+ people	\$495 per person

3 days

A written examination is included with this course and is conducted on the afternoon of the final day of class.

Course description

This course focuses on all aspects of a condition-based maintenance approach to machinery reliability including the effective detection of problems, troubleshooting and analysis, correction, and prevention.

Following an overview of condition technologies, vibration detection and analysis fundamentals, the student is taught the troubleshooting strategies that lead to the true sources of the most common maintenance-related vibration problems. Techniques aimed at the prevention of these problems solve not only existing machinery problems but provide a foundation for fundamental changes in maintenance practices. Relevant case histories and discussions of machinery problems students are currently experiencing enhance the learning experience.

- Machinery vibration fundamentals
 - Cause and effect relationship sources
 - Vibration terminology
 - Relationships between time, frequency, amplitude and phase
- Optimizing vibration detection and analysis
 - Transducer selection and placement
 - Data collection parameter optimization
 - Proper application of advanced detection methods
 - Practical approach to vibration alarm limits

- Solving the most common vibration problems
 - Resonance – Identification, correction, prevention
 - Unbalance – Sources, identification, correction
 - Misalignment – Sources, identification, correction
- Extending the life of rolling element bearings
 - Most common causes of premature failure
 - Detection strategies
 - Troubleshooting and prevention
 - Overview of proactive installation and lubrication
- Amplitude, spectrum, time waveform, and phase characteristics of machinery problems
 - Beats, sidebands, harmonics
 - Causes and effects of shaft motion on machine components
 - Understanding bent shaft, gear, electrical, and bearing symptoms

Prerequisite

RMI On-line course*
WI100 Vibration basics

Reading material*

JM2014 Vibration monitoring of bearings
acceleration and velocity monitoring

* On-line learning material at aptitudeexchange.com