



Work Identification

WI201 Fundamentals of Machine Condition

Recommended for

Engineers and technicians whose responsibilities require them to be proficient in the setup and use of the SKF condition monitoring system; maintenance supervisors, predictive maintenance coordinators, reliability engineers, inspectors, shop supervisors, advanced mechanics, and millwrights who wish to become familiar with vibration monitoring and analysis.

Course objective

To provide a practical approach to detecting and analyzing common machinery problems using vibration monitoring and analysis.

2009 course schedule

On-site only

2009 tuition

Public classes N/A

On-site	
per class	\$10,995
# people	16
17+ people	\$295 per person

2 days

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

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Course description

Designed for maximum class participation. A combination of overhead presentations, group exercises, video tapes, and written reviews are used to peak participant interest and encourage participation and understanding.

Basics of vibration

- Time waveform analysis
- Amplitude vs. frequency
- Vibration – measurable characteristics
- Vibration sensors
- Scale factors
- Measurements and units
- Displacement probe/eddy probe
- Multi-parameter monitoring
- Resonance
- Detection vs. analysis

Setting up the vibration measurement

- Physical and database considerations
- Selecting the machinery
- Sensor location and mounting methods
- Cable attachments
- Setting F_{max}

Alarm methods and setting alarms limits

- ISO guidelines
- Assessing overall vibration severity
- Spectral enveloping and bands
- Phase alarms
- Exception criteria

Spectral analysis and phase analysis

- Spectral analysis techniques and pattern recognition
- Sidebands
- Harmonics
- Waterfall plot
- Understanding phase

Vibration signal processing methods

- Enveloping
- SEE™ technology (Spectral Emitted Energy)
- HFD (High Frequency Detection)

Analyzing typical machinery problems

- Imbalance and misalignment
- Bent shaft
- Mechanical looseness
- Cocked bearing

Monitoring rolling bearings

- Why do bearings fail?
- Bearing failure stages
- Bearing defect frequencies
- Displaying fault frequencies

Vibration diagnostic tables

- ISO 2372 Vibration Diagnostic Table

Prerequisite

RMI On-line course*

WI100 Vibration basics

Reading material*

JM2001 Introduction guide to vibration
 JM2007 Vibration principles
 JM2002 Spectrum analysis
 MBO2007 Benchmarking for best practice

* On-line learning material at aptitudeexchange.com