Educational Services

Maximize Your Investment with Well-Trained Personnel

Time Waveform Analysis

Course# 2051 (CEUs: 2.1)

This 3-day course is designed to upgrade and enhance waveform analysis skills for vibration technicians and reliability engineers. There are several reasons that vibration analysts want to understand and use waveform analysis, since some significant defects are better analyzed in the time domain. The time domain provides visual confirmation of amplitude enhancement and reduction. Time waveform analysis can present, in a static picture, amplitude variations and changes in frequencies that the FFT cannot display without using multiple (dynamic) graphics. Further, a waveform graphically presents accurate peak vibration amplitudes representing defect severity.

Prerequisites: Intermediate vibration analysis or eighteen-month vibration related field experience is recommended.

Topics Include:

- **Waveform Data Acquisition:** Analog to Digital Conversion (A/D)
- **Waveform Parameters for Trending:** Peak to Peak, Crest Factor, and Analog Overall
- **Waveform Tools:** Revolution Markers, Difference Frequency markers, Phase, Peak, RMS, Crest Factor
- **Waveform Patterns:** Sinusoidal, Impacting, Truncated, Asymmetric, Transient/Random, Modulated and Discontinuity or Bad/Compromised Data
- **FFT vs. Waveform:** Benefits and limitations of each
- **Applications of Waveform Analysis:** Synchronous Time Averaging (STA) for rolls in nip; Peak Hold averaging for maximum carrier/sideband frequency amplitudes for rolling element bearings; Time Difference cursors for identifying beat frequencies and repeating impacts (gear teeth cracks or defects); Transient Analysis of motor inrush current; Distinguishing Misalignment from Looseness using waveform analysis as a confirmation to the FFT data; and Gearbox Analysis using STA waveforms and standard waveform discontinuity analysis

Course Information:

- Date: March 19 to 21; August 6 to 8 and December 17 to 19, 2019
- Time: 8:30 AM to 4:30 PM daily
- Price: $2,200
- Location: Emerson Training Center 835 Innovation Drive, Knoxville, TN 37932
- Registration: To register, complete this **Registration Request**, or for more information, contact Emerson Educational Services at +1 800 338 8158.

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