

## Upcoming Training Class:

# VIBRATION ANALYSIS & PREDICTIVE MAINTENANCE TECHNIQUES

Hosted by Tulsa Tech

**Aug. 16 - 19, 8 am - 5 pm**

Tulsa Tech Training Center  
3638 S. Memorial Dr., Tulsa OK

**918.828.5000 | tulsatech.edu**



In Partnership With



## ANALYSIS I SEMINAR AGENDA (ISO CATEGORY II)

INTRODUCTION TO VIBRATION ANALYSIS AND PREDICTIVE MAINTENANCE  
(Recommended Full-time PdM Vibration Experience = 6 Months Minimum)

### 1. Seminar Overview

#### 2. What is Vibration and How Can it be Used to Evaluate Machinery Condition?

- » What is Frequency and How Does it Relate to a Time Waveform?
- » What are Vibration Displacement, Velocity, and Acceleration?
- » How to Convert From One Vibration Parameter to Another (in/sec to g, etc.)
- » What is Phase?
- » What is a Vibration Spectrum (Also Called an "FFT" or "Signature")?
- » Effect on Frequency Accuracy of Number of FFT Lines
- » Difference Between RMS, Peak, and Peak-to-Peak Amplitude and its Significance
- » When to Use Displacement, Velocity, or Acceleration
- » How Much is Too Much Vibration?

#### 3. Overview of the Strengths and Weaknesses of Typical Vibration Instruments

#### 4. Overview of Various Vibration Transducers and Their Optimum Applications

#### 5. Role of High Frequency Enveloping (HFE) and HFD in Detecting & Tracking Certain Faults

- » HFE includes the following (in alphabetical order).
  - Acceleration Enveloping
  - Amplitude Demodulation
  - PeakVue
  - Shock Pulse
  - Spike Energy

#### 6. Introduction to Vibration Signature Analysis and How it is Used to Evaluate

- Machine Operating Condition
- Overview of 5-Page "Illustrated Vibration Diagnostic Chart"
  - » Mass Unbalance
  - » Eccentric Rotors
  - » Bent Shaft
  - » Misalignment
  - » Mechanical Looseness, Improper Component Fit, and Soft Foot
  - » Tracking of Rolling Element Bearing Health Using Vibration Signature Analysis
  - » Belt Drive Problems
  - » Electrical Problems in Motors

#### 7. Proven Method for Specifying Spectral Band Alarm Levels and Frequencies Using Today's Predictive Maintenance Software Systems

#### 8. Guidelines for Vibration Acceptance Testing of New and Rebuilt Machines

#### 9. Operating Basics of Common Machines and Recommended Locations to Acquire Vibration Measurements

#### 10. Actual Case Histories of Vibration Diagnostics on Various Machine Types

### Registration

Attendees will receive a Certificate of Completion with credit for contact and professional hours. Register at <http://www.opmug.net/> or contact [chris.groden@tulsatech.edu](mailto:chris.groden@tulsatech.edu) to reserve a seat for this session. Registration deadline is July 12, 2022.

### Course Cost: \$1,750

Registration will be limited to the first 16 OPMUG members that register. For more information about classes or lodging, please call Chris Groden at (918) 828-5433.

### Course Cancellation Policy

A training class can be cancelled when, less than 75% funded and is less than 30 days from the start of class (training). In this case there will be a 100% fee refund for registered participants. If a registered participant cancels less than 10 days before the start of class (training) they will forfeit 50% of the registration fee.