



MAINTENANCE TROUBLESHOOTING INTERNATIONAL LLC

TMR-303

Hands-On Training Center: 2860 Ogletown Road, Newark, DE 19711
 Corporate Offices & Mailing Address: 2917 Cheshire Road Wilmington, DE 19810
 Phone/TXT: 302.593.2698 (Frank) Email: Frank@mtroubleshooting.com
 Website: www.mtroubleshooting.com

TMR-303 TROUBLESHOOTING MECHANICAL ROTATING EQUIPMENT

Downtime is expensive. Regardless of the precautions you've taken and preventive maintenance practices you've implemented, sometimes things just go wrong and you need it fixed now. But in order to fix it you must know how to isolate and define the problem, and that's what this course is all about – teaching you how to quickly and accurately troubleshoot mechanical rotating equipment so that you can avoid costly downtime. Rather than teaching about "equipment specific" situations you are taught to troubleshoot based on the common components that make up a piece of equipment. The attendee will learn about basic mechanical applications, failures, life expectancy and maintenance of shafts, bearings, couplings, chains, sprockets, bushings, gears, belts, sheaves and machine components. Most importantly you will learn how to find and fix the real problems with your equipment, and not just the symptoms. Attendees are taught the logic of troubleshooting based on the common components that make up a piece of equipment. The class covers details of basic mechanical applications, failures, life expectancy and maintenance of shafts, bearings, couplings, chains, sprockets, bushings, gears, belts, sheaves and machine components. **THIS IS OUR MOST ATTENDED AND AND MOST POPULAR COURSE. Come and you will see why!!**



Types of Equipment

- Electrical Power
- Electrical Control
- Mechanical Stationary
- Mechanical Rotating

Bearings and Bearing Life

- Plain Bearings
- Anti-friction Bearings

Bearing Identification

- Series numbers
- Calculating the ID from the number
- Identification of bearings

Use of Vernier Micrometers

- Reading a micrometer
- Getting a feel for taking a reading
- Shaft measurement
- Use of telescope gages

Bearing Fit Tables

- Learning to read the tables
- Short cuts for common machines

Shafting

- Fracture and fretting
- Shaft seat
- Making a shaft print

Bearing Removal and Installation

- Using a press
- Thermal methods
- Checking the shaft shoulder
- Bearing failure analysis

Housings

- Housing bores and proper fits
- Expected interference

Machinery Lubrication

- Oil or Grease?
- Calculation of amount of grease
- Calculation of frequency of re-lube

Couplings

- Elastomeric and Metal
- How to pick a coupling
- Slow-motion studies
- Use of the strobe light

V-Belt and Sheaves

- Classification
- Sheave inspection
- Tensioning

Positive Drives

- Timing belts and HTD belts
- Synchronous drives

Chain Drives

- Tooth and chain wear measurement

Gears and Gear Boxes

- Tooth inspection and measurement of backlash

Vibration Analysis

- Vibration severity and using The Rathbone Chart
- Determining machinery faults
- Velocity limits — 4 to remember

Acoustical Emission Analysis

- Shock pulse and SEG
- BDU using a TPI-9080

Infra-red Inspection

- Infra-red thermometers and infra-red thermography
- Test strips

Oil Analysis

- Spectrographic techniques
- Ferrographic analysis
- Viscosity measurement

Dynamic Balancing and Shaft Alignment

- The need for technical maintenance

CLASS FORMATS AVAILABLE

- MTI Hands-On Center \$1295/person
 - On-Site) Ask for Quote
- Quick Quote Available in 48 hrs.

CLASS DURATION

- 3-days, 22.5 hours of instruction
- 65% or more hands-on activities

FREE TOOLS OR BOOKS

- 0-1" Vernier Micrometer (\$54 value)
- 6" Bearing ID Scale (\$11 value)
- Audel Mini-Ref (\$30 value)
- Sheave Gauge (\$24 value)
- V-Belt Tension Tester (\$45 value)

Class Details: Each student will receive class books, work activity sheets, self-test progress evaluations, as well as questions from the instructor to make sure they understand the material presented. It is expected that an attendee will leave the class with the basic knowledge of the subject and possess new found skills to better equip them when they return to their job. A certificate suitable for framing will be issued to each attendee who successfully completes the course. Students receive \$164 worth of tools and books for FREE. Call, email or check the website for the next time this course is scheduled at the MTI training center or as a ZOOM interactive session. On-site sessions? Request a quick 48-hour turnaround quote. Revised: 12/23/2020