

Call 1-877-978-7246



PUMP REPAIR & MAINTENANCE

Day 1 - Centrifugal Pump Design, Pump Parts, Bearings, and Vibration Measurement

Day 2 - Pump Coupling, V-Belt Drives, Pump Troubleshooting, Packing, & Mechanical Seals

Learn the Fundamentals of Pump Repair
and the Added Value of Preventive Maintenance



- Reserve your space now either **online** or by calling us at **1-877-978-7246!**
- Check us out online at **live.tpctraining.com** for a complete list of all virtual and in-person seminars.
- This seminar is also available for **Virtual** or **In-Person Private Group Training**

Learning Objectives:

- Identify types of pumps and their parts
- Identify pump drivers and their use
- Assemble & disassemble an ANSI pump
- Troubleshoot, install and lubricate bearings
- Understand vibration & acoustical measurements
- Repair a shaft & pump case
- Understand shaft alignment techniques
- Identify, inspect an repair V-belt drives
- Troubleshoot wetted end pumps
- Pack a shaft and a pump
- Troubleshoot and install mechanical seals
- Understand pump case repair methods
- Develop a pump maintenance program



SEMINAR OVERVIEW

Available in both virtual and in-person, instructor-led formats, this two-day hands-on Pump Repair & Maintenance course is designed to bring students up to speed in their knowledge of field pump repair, maintenance and servicing as quickly and efficiently as possible. This course is suitable both for novice technicians seeking the fundamentals of pump repair as well as experienced technicians seeking skills improvement or a refresher. The course covers pump design, types, parts, common causes of pump failure, repair techniques, and predictive maintenance for pumps. The goal of the course is to ensure that students understand the causes of pump failure, how to bring pumps back to life when they fail, what they should learn from those incidents, and how to reduce the risk of future failures.

WHAT YOU WILL TAKE HOME

- A laminated, full-color TPC Training Reference Guide detailing all the “mustknow” information covered in the class. Keep this with you while on the job for immediate knowledge recall.
- Comprehensive classroom materials
- A Personalized Training Certificate with 0.8 TPC Training Continuing Education Units for each day attended, 1.6 for both days.
- All the information you need from asking our instructors specific questions about your own unique equipment or facility.

CONTINUING EDUCATION

Upon completion of this seminar, the student will receive a Certification of Completion and .8 TPC Training CEUs per day attended. Most employers and many government agencies accept TPC Training CEUs to fulfill their continuing education requirements. If the student needs CEUs to renew a state license, please contact us at 303-867-5039 to ensure the state licensing board has approved the seminar. If we are currently not approved by your state licensing board, we are happy to begin the process as long as we receive your request at least one month before the training date.

DISCUSSION TOPICS

Centrifugal Pump Design

- A Short History
- Bernoulli’s Principle & the Venturi Effect
- Centrifugal Pump Design

Pump Parts and Identification (Hands-On Activities)

- Wetted End Parts
- Dry End Part, Pump Tree & Drivers
- How to Read a Cross-Sectional View

Bearing Removal and Installation

- Bearing Types and Identification
- Expected Life Based on Bearing Loads and Speeds
- Proper Installation of Pump Bearings
- How to Use Micrometers (Hands-on Exercise)
- Press Fitting & Thermal Installation
- Lubrication of Pump Bearings

V-Belt Drives for Pumps

- Types & Alignment of Belts
- Sheave Groove & Belt Inspection
- Force Deflection Method of Belt Tensioning

Simple Vibration Measurement

- History of Vibration as a Condition Testing Tool
- How to Read a Vibration Meter
- Measurement of Vibration Velocity
- Troubleshooting Using a Vibration Meter

Bearing Failure Analysis

- Disassembling a Bearing for Inspection
- Troubleshooting Bearing Failures

Acoustical Measurement of Pump Bearing Condition

- Introduction to Acoustical Measurements Spalling & How to Determine When It Occurs
- Pump Bearings Condition Guide

Split Case Pump Rebuilding Techniques

- Techniques for Rebuilding a Split Case Horizontal Pump
- Techniques for Rebuilding an ANSI Frame Back Pull-Out Pump

Pump Foundations

- Anchoring, Shimming & Grouting

Pump Shafting Inspection and Repair

- Shaft Condition & Drawings
- Stub Shaft Techniques
- Bowed Shafts & Diameter Corrections

Suction and Discharge

- Piping
- “Dos and Don’ts” of Pump Piping Installation

Pump Coupling and Shaft Alignment

- Soft Foot Inspection & Correction
- Coupling Installation Techniques
- Shaft Alignment Techniques
- Laser Alignment

Wetted End Pump Troubleshooting

- Cavitation & Unbalance of Impellers
- Volute Wear, Piping Strain, & Air Entrainment
- Seal Failure & Flange Leaks

Packing

- Types of Shaft Packing
- Tools for Repacking a Pump
- How to Pack a Pump

Mechanical Seals

- Types of Mechanical Seals (Hands-On Activity)
- Seal Installation & Troubleshooting

Bolted Sealing Values for Wet End Assembly

- Sequence Diagrams
- Torque Chart

Developing a PM Program for Pumps

- The Need to Identify Critical Equipment
- Check Sheets & Dead Heading
- Predictive Maintenance Tools (Vibration Measurement, Oil Analysis, Infrared, and Ultrasound)
- Pressure & Flow Testing
- Pump Purchases & Acceptance
- Advantages of Computer-Based Maintenance Management Software (CMMS)

JOIN OUR CLASSROOM SEMINARS FROM VIRTUALLY ANYWHERE

Our virtual instructor-led training option allows students to connect to a live classroom seminar via a web link, with the ability to participate full in the classroom dialogue, exercises, and Q&A. Online participants get all the benefits of the full classroom experience, plus the convenience of remote access.

Features include

- Two full days of live, interactive instruction from a TPC Training instructor
- All classroom materials in PDF format
- Certificate of completion for 16 hours of live training
- Full technical support to ensure your online experience is a rewarding one

SEMINAR FEE & AGENDA

This 2-day course is just \$1195 (Earn 1.6 CEUs)

7:30 am	Registration
8:00 am	Class Begins
12:00 -1:00 pm	Lunch (on your own)
4:30 pm	Class Ends

NO RISK REGISTRATION & MONEY-BACK GUARANTEE

You can reserve your space in the class at any time and cancel without penalty. Cancellations made more than 14 days prior to the seminar may be refunded or rescheduled. Cancellations made within 14 days may be rescheduled for any future topic and/or date. If you’re not satisfied with the course, we’ll promptly refund your payment.

BRING THE TRAINING TO YOUR FACILITY VIRTUALLY OR IN-PERSON

Every public seminar class in our Course Catalog can be conducted virtually or on-site at your facility, with the same expert instructors. To arrange an in-person private group training, call or email us at virtual@tpctraining.com.

Some Advantages of In-Person Private Group Training

- Cost Savings — Save time and travel costs by keeping workers on-site
- Customized Content — Tailor the seminar to your facility and equipment
- Flexibility — Accommodate multiple shifts and different start and end times