MAINTENANCE TROUBLESHOOTING INTERNATIONAL

CPM-303

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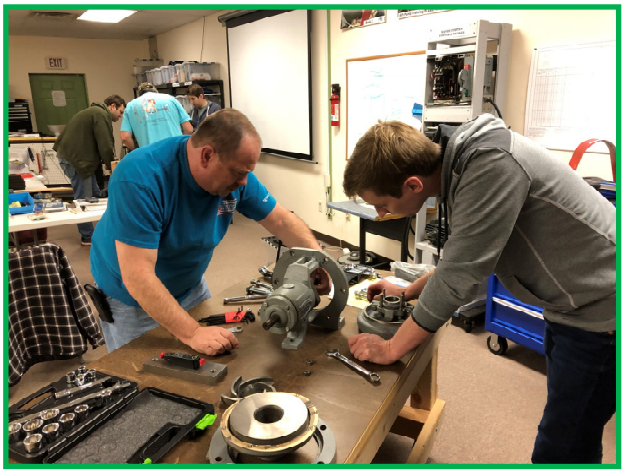
CPM-303 CENTRIFUGAL PUMPS: MAINTENANCE, TROUBLESHOOTING, REPAIR AND REBUILDING

The course covers centrifugal pumps and pump theory including how to read a pump curve and select the proper pump for the job. Several different ANSI end suction pumps are disassembled, checked, and reassembled to industrial standards. Three types of sealing are available: expeller, packing, and mechanical seal. The attendee performs accurate measurement of bearing shaft fits, precision setting of the impeller, checking for shaft straightness, packing installation as well as setting of a mechanical seal. Use of premade as well as "home made" gaskets are covered in the course. A pre-test is used to assess skill level at the beginning of the course and post-test is used involving actual pump rebuilding to document the level of improvement of the attendee. During the three days of class, each student will be given at least two pumps to rebuild. The attendee should leave the course an be able to rebuild centrifugal pumps to factory standards.



HISTORY OF PUMPS
- Early pumps
- John Appold and the curved vane pump
- Development of pump theory and engineering tables
- Investigation of Cameron's Tables
- Components of a centrifugal pump—why all pumps are the same

HYDRAULICS AND READING A PUMP CURVE
- Understanding density, specific gravity, pressure, flow, and head
- Calculation of head
- Calculation of head losses and developing a system curve
- Choosing a pump to do the job
- Concern for the BEP (best efficiency point) and cavitation—NPSHR and NPSHA

PRECISION MEASURMENT
- Using a scale
- Using a vernier caliper
- Using a vernier micrometer
- Using telescope gages

BEARING LIFE AND BEARING IDENTIFICATION
- Series numbers
- Calculating the ID from the number
- Identification of bearings

SHAFT MEASURMENTS AND HOUSING MEASUREMENTS
- Checking bearing seats
- Checking housing bores
- Checking shaft for straightness
- Shaft repairs

DISASSEMBLY, CHECKING, and REBUILDING OF THREE DIFFERENT ANSI PUMPS
- Reading a pump rebuilding manual and what to do if a manual is unavailable
- Pump disassembly with concern for troubleshooting
- Shop hydraulic press work
- Shaft measurement and sketching the shaft
- Component inspection
- Rebuilding, repacking, and reassembling the pump

PACKING AND MECHANICAL SEALS
- Measurement and cutting a set of packing rings
- Lantern rings and proper placement
- Setting packing for planned leakage
- Mechanical seal theory and practice
- Seal installation
- Troubleshooting seal problems
- Gasket cutting

PUMP COMPONENT REPAIRS
- Spray techniques for shafting
- Shaft sleeving
- Bore sleeving
- Weld repair and grinding
- Epoxy repairs
- Shaft straightening

TROUBLESHOOTING PUMP PROBLEMS
- Listening with a stethoscope
- Using a vibration meter
- Using a bearing analyzer
- Detecting misalignment
- Hydraulic troubleshooting
- Correction of NPSHR problems

CLASS FORMATS AVAILABLE
- ☑ MTI Hands-On Center $1295/person
- ☐ ZOOM Interactive (not offered)
- ☑ On-Site (Your Location) Ask for Quote

Quick Quote Available in 48 hrs.

CLASS DURATION AND HANDS-ON
3-days, 22.5 hours of instruction
55%-60% hands-on activities

FREE TOOLS AND BOOKS
0-1" Vernier Micrometer ($54 value)
Audel Mini-Ref ($30 value)
6"Bearing ID Scale ($12 value)
ANSI Pump Chart ($5 value)
SKF Bearing Tables ($25 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. 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: 12/20/2020