



MU177: Mechanical Maintenance in Industrial Plants

Training Description:

This intensive training course provides participants with the necessary skills to perform mechanical maintenance, including the removal and replacement of equipment (pumps, gearboxes, motors and power transmission systems) and identification and rectification of bearing faults within these systems. The course teaches the main mechanisms and mechanical equipment of industrial installations: pumps, valves, heat exchangers and cooling towers. The course examines in detail each of this equipment, their main characteristics and constructive materials, to focus on usual breakdowns and scheduled maintenance required to ensure high availability and long life.

The aim of this course is that participants know the mechanical equipment of an industrial installation, the different options and their selection criteria, characteristics and maintenance, both corrective and preventive. Keep in mind that almost 80% of the workload of maintenance refers to mechanical maintenance.

It is an essential training course for professionals and heads of maintenance.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand the principles of preventive and first-line maintenance
- ✓ Apply safe working practices
- ✓ Describe a range of mechanical faults and plan suitable courses of action
- ✓ Understand the principles of power transmission systems
- ✓ Remove and refit taper-lock bushes, keyed shafts, belts, chains and couplings
- ✓ Install and align shafts; tension drive train components
- ✓ Identify types of bearing, their typical applications and common defects
- ✓ Correctly remove and refit various types of bearings
- ✓ Describe various methods of removing broken studs
- ✓ Recognise stripped threads and correctly use thread repair equipment
- ✓ Manufacture gaskets using industry standard techniques
- ✓ Understand how to remove and replace seals and gland packing
- ✓ Understand the operation of various gearboxes
- ✓ Recognise various types of conveyor systems and their main components

Training Designed for:

This course is intended for anyone required to undertake mechanical maintenance on production/process equipment. This course is equally suitable for production operatives or for craft personnel already involved in maintenance activities.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ CENTRIFUGAL PUMPS
 - Operation principle
 - Characteristic parameters
 - Types of centrifugal pumps
 - Main constituent elements
 - The mechanical seal
 - Types of seals API 682
 - Scheduled maintenance
 - Main breakdowns
- ❖ Workshop / Case Studies

DAY TWO:

- ❖ MANUAL VALVES AND AUTOMATIC VALVES
 - Operation principle
 - Characteristic parameters
 - Types of valves
 - Main constituent elements
 - Scheduled maintenance
 - Main breakdowns
- ❖ Workshop / Case Studies

DAY THREE:

- ❖ EXCHANGERS
 - Operation principle
 - Characteristic parameters
 - Plate heat exchangers
 - Shell and tube heat exchanger
 - Classification for shell and tube heat exchanger
 - Exchangers selection criteria
 - Main constituent elements
 - Energy balances as a maintenance tool
 - Scheduled maintenance
 - Main breakdowns
- ❖ Workshop / Case Studies

DAY FOUR:

- ❖ COOLING TOWERS
 - Operation principle
 - Characteristic parameters
 - Types of cooling towers
 - Scheduled maintenance

- Scheduled maintenance
- Legal maintenance according to RD 865/2003
- Main breakdowns

❖ **Workshop / Case Studies**

DAY FIVE:

❖ **LUBRICATION**

- Lubrication and lubricants
- Lubrication principles
- Lubricants and their functions
- Types of lubrication: Boundary lubrication, hydrostatic lubrication and hydrodynamic lubrication
- Lubricants classification
- Solid lubricants
- Liquid lubricants. Mineral and synthetic oils.
- Doughy lubricants and semi-solid lubricants
- Greases of simple organic thickener
- Greases of complex organic thickener
- Special organic greases
- Greases of inorganic thickener. Synthetic greases
- Lubricant pastes. Dry film lubricants.
- Aerosol lubricants
- Additives
- Oil test (methods and outcome assessment)

❖ **Workshop / Case Studies**

❖ **Course Conclusion**

❖ **POST-ASSESSMENT and EVALUATION**

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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