



MU178: Mechanical Seals Selection, Maintenance, Troubleshooting & Failure Diagnostics

Training Description:

This intensive training covers a large range of seal types like Pusher Seals, Non-Pusher Seals, Cartridge Seals, Split Seals, Double Seals, Tandem Seals, Spring Seals, Bellow Seals and provides detailed seal classification. The course explains the purpose and essential components of mechanical seals. The participant is instructed in the identification and characteristics of materials commonly used to make seal faces and seal hardware, and to understand the limitations of seals. Various seal designs and their application will be described.

The course will cover mechanical seal troubleshooting and seal selection. Also, the course describes conditions that may affect mechanical seal performance. The steps necessary to prepare to remove, and to remove, a failed mechanical seal will be demonstrated. The course trains the participant in failure analysis to determine the cause of seal failure and identify the means to correct the problem or condition that caused the failure. Seal disassembly and reassembly, O-ring installation, and seal installation will be demonstrated.

The course will highlight:

- Principle of operation of mechanical seals
- Mechanical seal designs and arrangements
- Selection of mechanical seal
- Failure analysis of mechanical seals
- Maintenance of mechanical seals

Training Objectives:

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

- ✓ Identify the basic components of a mechanical seal
- ✓ Explain how process fluid, temperature and operational conditions affect mechanical seals
- ✓ Understand how to select a mechanical seal
- ✓ Describe seal damage caused by chemical attack, heat and mechanical action
- ✓ Identify the correct tools and procedures for maintaining mechanical seal
- ✓ Enhance their basic knowledge related to selection and maintenance of mechanical seal
- ✓ Better understanding of how manufacturers design and develop mechanical seals for environment
- ✓ Improve their ability to select the appropriate mechanical seal.
- ✓ Improve their ability to troubleshoot seal problems and avoid recurrence
- ✓ Better control of the management of pumps and compressor maintenance and operation
- ✓ Better understanding of mechanical seal installation and maintenance procedures

Training Designed for:

This course is intended for those directly relevant to those working in process plants using rotating equipment fitted with mechanical seals and associated support equipment; Mechanical Engineers, Mechanical Technicians, Maintenance Engineers, Plant Engineers and Operators.

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
- ❖ **Fundamentals of Mechanical Seals**
 - Advantages of Mechanical Seals
 - Operating Principles of Mechanical Seals
 - Basic Parts of Mechanical Seals
 - Barrier Fluid
 - Thermal Considerations
 - Hydraulic balance
 - Classifications of Mechanical Seals

DAY TWO:

- ❖ **Environmental Control of Mechanical Seals**
 - Sealing Abrasives
 - Sealing Crystallizing Fluid
 - Temperature Control
 - Seal Flushing
 - API Seal Flush Plans
 - Controlling Fugitive Emissions from Mechanical Seal

DAY THREE:

- ❖ **Selection of Mechanical Seals**
 - Materials of Construction
 - Mechanical Seal Specifications
 - ANSI/API 682 Seal Specifications
 - Seal Arrangement Selection
 - Seal Design Selection
 - Secondary Sealing Devices
 - Case Studies

DAY FOUR:

- ❖ **Mechanical Seal Troubleshooting and Failure Diagnosis**
 - **Causes of Mechanical Seal Failure**
 - Seal Failure Analysis
 - Seal Face Deflection
 - Seal Failure due to Heat Buildup
 - Troubleshooting

- Examples and Case Studies

DAY FIVE:

❖ Mechanical Seal Installation and Maintenance

- Equipment Check Points
- Seals Check Points
- Installation of a Mechanical Seal
- Required Maintenance Tools
- Removal of a Mechanical Seal
- O-ring installation
- Seal Reassembly

❖ 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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