MeTec
EMPWER YOUR TECHNICAL SKILLS

MECHANICAL SEALS: SELECTION, INSTALLATION & DIAGNOSTICS

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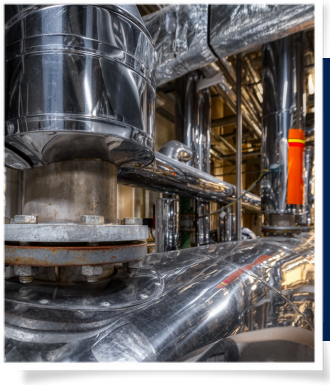
MECHANICAL SEALS: SELECTION, INSTALLATION & DIAGNOSTICS



OVERALL DESCRIPTION:

This course goes beyond theoretical principles to deliver actionable, field-proven strategies for managing mechanical seals. Leaks and premature failures in rotating equipment are not merely maintenance issues; they are significant threats to production efficiency, safety, and environmental compliance. This course is meticulously designed to equip professionals with the deep knowledge and hands-on skills required to master the entire lifecycle of a mechanical seal, from initial selection and precise installation to advanced troubleshooting and failure analysis. By focusing on predictive and preventative strategies, we aim to transform reactive maintenance into a proactive, cost-effective discipline that minimizes downtime and maximizes the lifespan of critical assets.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- Analyze and Apply the fundamental principles of mechanical sealing technology to real-world applications.
- Accurately Select the most suitable mechanical seal type and material for specific operating conditions, including fluid properties, pressure, temperature, and speed.
- Perform flawless and repeatable installation procedures, recognizing the critical role of alignment and precision in seal longevity.
- Implement effective monitoring and preventative maintenance strategies to detect potential issues before they lead to failure.
- Diagnose common mechanical seal failures by identifying root causes and implementing corrective actions.
- Evaluate and Optimize seal support systems to enhance performance and reliability.

Course Outline:

Fundamentals of Mechanical Sealing:

- Introduction to sealing principles and the function of mechanical seals.
- Types of mechanical seals: pushers, non-pushers, cartridge, and component seals.
- Material science for seals: face materials, elastomers, and metallurgy.
- Understanding the role of the seal support system.

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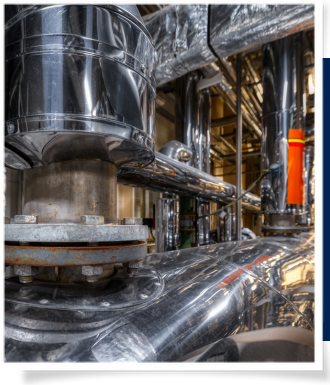

Course Outline:

Selection and Specification:

- Analyzing process parameters: pressure, temperature, velocity, and fluid characteristics.
- Adherence to industry standards (API 682, ISO 21049).
- Case studies on seal selection for challenging applications.

Installation and Commissioning:

- Best practices for pump and equipment preparation.
- Precise seal component handling and mounting techniques.
- Alignment and run-out checks: the keys to reliability.
- Proper commissioning and start-up procedures.

Failure Diagnostics and Troubleshooting:

- Common failure modes: wear, corrosion, blistering, and heat checking.
- Systematic approach to root cause analysis.
- Practical troubleshooting guide for seal leaks and failures.

Preventative Maintenance and Monitoring:

- Establishing effective maintenance schedules and data logging.
- Predictive technologies: vibration analysis and thermal imaging.
- Flushing plans and heat dissipation strategies.

WHO SHOULD ATTEND?

This course is specifically tailored for reliability, maintenance, and rotating equipment engineers, maintenance supervisors, senior technicians, and planners who are responsible for the selection, installation, repair, and troubleshooting of mechanical seals. Individuals involved in plant operations, design, and commissioning will also gain invaluable insights to improve system integrity and performance.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.