Mechanical Seals

INTRODUCTION

- This Mechanical Seals is an intensive, highly practical, and useful five-day training course. The participant will gain up-to-date information and practical understanding of the basics, applications, troubleshooting and failure diagnosis, installation, and maintenance of mechanical seal. Mechanical seal for pump and compressor applications will be addressed. Recent design like dry mechanical seal will also be addressed.

The highlights of this training course are as follows:

- Lubrication and sealing concepts
- Mechanical Seal and Dry Gas Seal design
- Different arrangements of mechanical seals
- Optimal selection of seals and flush plans
- Failure diagnosis and troubleshooting

OBJECTIVES

At the end of this training course, participants will:

- Understand the different types of seals
- Have learned about selection, operation, and maintenance strategies
- Be able to troubleshoot seal problems
- Understand how seals are fitted
- Understand how seals are tested
- Understand API flush plans

ORGANISATIONAL IMPACT

- On completion of this training course, the delegate will be able to critically analyse the methodologies employed within the organisation and instigate improvements where required.

The knowledge gained in this Mechanical Seals course will:

- Enable the delegate to optimize the operation and maintenance of various types of pumps & compressors
- Give the delegate confidence to carry out failure analyses on seals thereby avoiding repetitive failures
- Improve seal operating and maintenance techniques
- Enable measures to quantify equipment condition
- Give better control of mechanical seal providers
- Enable better identification and specification of new and replacement seals
- Allow tighter control of maintenance budgets by the avoidance of unplanned equipment failures in service

PERSONAL IMPACT

- Improved confidence when dealing with suppliers and contractors
- Better understanding of how manufacturers design and develop mechanical seals for environments
- Better control of the management of pumps and compressor maintenance and operation
- Improved personal knowledge of sealing systems
- Better ability to troubleshoot seal problems and avoid recurrence
- Confidence and ability to select the appropriate flush plan thereby improving reliability and personal profile to senior management

WHO SHOULD ATTEND?

This training course is directed towards:

- Supervisors
- Team Leaders in Maintenance, Engineering and Production
- This course on Mechanical Seals will also benefit anyone who wishes to update themselves on Maintenance Engineering Technologies, judge the suitability of these technologies for their needs, and learn how to implement them for the benefit of their organisations.

Course Outline

Basic Concepts of Fluid Sealing

- Role of tribology, leak rates, heat transfer, design considerations, materials, application to mechanical seal
- Lubrication fundamentals
- Basic fluid mechanics, Reynolds equation, lubrication solutions, application to mechanical seal

Mechanical Seal Design

- Theoretical aspects and design
- Factors affecting design
- Materials of construction
- Mechanical seal selection
- Data requirements for seal selection
- Seal type selection
- Selection of the primary seal
- Selection of the seal arrangement

Mechanical Seals Configurations

- Mechanical seal applications
- Seals Classification
- Wet mechanical seal
- Dry mechanical seal
- Balanced and unbalanced mechanical seals
- Mechanical seals pump considerations
- Mechanical seals compressor considerations
- Mechanical seals troubleshooting

Failure Diagnosis

- External symptoms of seal failure
- Visual seal examination
- Common seal failure modes-seal faces
- Common seal failure modes-secondary seals
- Common seal failure modes-seal hardware
- Seal installation tolerances
- Vibration effect on a mechanical seal
- High temperature effect

Mechanical Seal Operation

- Operating limits
- Operating conditions

Mechanical Seal Performance

- Acceptable performance
- Mechanical seal related standards
- Pre-installation machine checks
- Mechanical seal installation
- Mechanical seal maintenance
- Seal handling and inspection