



ENVIRONMENTAL TECHNOLOGY



Equipment Reliability Courses

- Increase mean time between failure / mean time between repair
- Maximize rotating equipment reliability
- Reduce maintenance costs
- Improve site efficiency

2024



Developing Your Team's Skills

To operate industrial plants both safely and efficiently, you need highly skilled, well-trained and knowledgeable personnel.

With the introduction of new technology, production processes, the need for increased plant availability, and the global awareness of manufacturing processes being sustainable, it is important to ensure that these skills are kept up-to-date.

AESSEAL® provides specialist training courses that are specifically designed to help your staff develop their knowledge and understanding of mechanical seals, centrifugal pumps and bearings.

These courses are designed for companies that are aiming to:

- Increase mean time between failure / mean time between repair
- Maximize rotating equipment reliability
- Reduce maintenance costs
- Improve site efficiency

Specialist Training



Chris Dean is the Group Technical Training Officer for AESSEAL® and has been involved in mechanical engineering for over 35 years. In these years, Chris has developed a vast array of skills and experience regarding pump and seal installation and maintenance.

Having worked in a variety of industries from Pulp and Paper to Chemical and Nuclear Reprocessing to Power, there isn't much Chris hasn't seen in relation to pump and seal maintenance. Having this experience over an extended period of time has enabled Chris to develop relationships with distributors, end users and pump repair houses throughout the world.

Chris regularly conducts rotating equipment reliability training both at AESSEAL® and at customer premises throughout the world. The primary objective of this training is to increase mean time between failure to reduce operational costs and increase profitability. Chris' relaxed, but professional approach to the training sessions ensures all attendees leave with the knowledge and skills that can be instantly applied in the workplace.



RAL Smith is an experienced Maintenance Engineer with 39 year's experience in Mechanical Engineering. Including 26 years specifically within the Mechanical Seal industry, working alongside clients, recommending sealing solutions and reliability upgrades.

Having worked within a variety of Industries from Chemical, Pharmaceutical, Water Authorities, Food and Beverage, Marine to Oil Refineries, RAL has a wide range of experience with rotating equipment, now providing skilled training within the United Kingdom and in other European countries.

RAL's professional approach to the training sessions ensures all delegates will leave with the knowledge and skills required to increase the reliability of their rotating assets.

“ Investing in our employees is the key success at Chemoxy International and we have repeatedly sent delegates to AESSEAL® for over 3 years. AESSEAL® offers a fantastic training package which enhances the quality of our work force and has intern improved the efficiently and reliability of our operations.”

Training & Development Manager, Chemoxy International

Courses Details

Costs

- Two days training with two nights accommodation
£1200/ €1400* per delegate
- Two days training with three nights accommodation
£1300/ €1550* per delegate

*Subject to change without notification

Please note: 2 nights accommodation includes bed and breakfast, evening meals, buffet lunch on both days and reference material.

Cost for Fuse in the System includes free access to the AESSEAL Level 1 e-learning course on our online training platform, ADVANCE. This will be valid for 6 months from the date the course is completed.

Cost for Advanced Pump includes free access to the AESSEAL Level 2 e-learning course on our online training platform, ADVANCE. This will be valid for 6 months from the date the course is completed.

Both courses are held at our Corporate Headquarters; AESSEAL plc, Global Technology Centre, Mill Close Bradmarsh Business Park, Rotherham, S60 1BZ., England. Spaces are allocated on a first-come first-served basis, so please book early to secure your place and avoid disappointment.

To book, please contact:

training@aes seal.co.uk or go to www.aes seal.com/en/services/training



ADVANCE

TRAINING THE EXCEPTIONAL

Fuse in the System

- 6th - 7th February 2024
- 16th - 17th April 2024
- 18th - 19th June 2024
- 10th - 11th September 2024
- 3rd - 4th December 2024

Advanced Pump

- 2nd - 3rd July 2024
- 10th - 11th December 2024

Tailored Training

Customized for your requirements and delivered at your convenience.

In addition to our standard courses we can also offer customized programmes designed around your needs. These can be delivered either at one of our Training Centres, or at your site. Our modular programme can be configured so that it is suitable for all levels in your organization from plant managers to maintenance operatives. To enquire about tailored training for your company, providing you have a minimum of 8 delegates, please contact us at least 12 weeks in advance.



Mechanical Seals - The Fuse in the System

Specialist Training to develop your workforce

AESSEAL® provides specialist training courses that are positioned to help you and your staff develop their knowledge and understanding of mechanical seals, centrifugal pumps and protection of bearings.

Course overview

This course is designed to give delegates an introduction to correct mechanical seal operation and an insight into root-cause and pump failure modes, accompanied by easy to implement troubleshooting techniques. This course aims to give an understanding of the benefits of installing mechanical seals, and how correct installation can lead to increased mean time between failure and improve site efficiency.

Who should attend

Whether new to this field or a seasoned professional looking to refresh their knowledge, this course is designed to give a practical insight into improved plant reliability. The course is suitable for plant managers, maintenance personnel, purchasing personnel and engineers. Or anyone looking to improve their site performance and asset reliability.

Key learning outcomes

- The principles behind good mechanical seal life and how to achieve it
- How to improve your margin for operational error
- The importance of correct rotating equipment operation
- The need for correct seal and seal support system selection and application
- Bearing life and the changes required for improvement
- The importance of the mechanical seal materials selection process and the properties of materials
- Simple troubleshooting techniques to improve equipment availability
- The operational importance of implementing mechanical seal standards



Cargill®

“Training provided by AESSEAL® gave me the required amount of knowledge which enabled me to analyse faults and select the appropriate mechanical seal. The trainer was able to support on specific plant issues giving suggestions on how we could operate in a more reliable manner.”

Mechanical Engineer, Cargill



Course Content

The course introduces delegates to correct mechanical seal operation, how to extend mechanical seal life, as well as easy to implement troubleshooting techniques.

What is a Mechanical Seal?

- Understanding positive displacement and centrifugal pumps
- Understanding packing
- How mechanical seals work
- Fluid Film in Single and Dual Seals
- Rotary v stationary design
- Seal types
- Development from component to cartridge
- Hydraulic balance
- Dual balance
- Single / double cartridge
- Monolithic face development

Introduction to Dual Seals and Systems

- Why we use dual seals
- Problems with component dual seals
- Seal face orientation
- Difference between barrier and buffer systems and their use
- Environmental issues and water consumption in single seals
- Estimating seal chamber pressure
- Thermosyphon and forced circulation fluid principles
- Pressurisation methods
- Internal seal pumping scroll benefits

Seal Installation / Pump Re-build Procedures

- Equipment inspection requirements
- Pre-install dimensional checks
- Correct seal installation checks
- Importance of correct impeller clearance
- Importance of correct bearing installation

Environmental Controls for Single Seals

- What environmental controls are?
- Improving single seal life
- Most common arrangements.
- Single environmental controls and single seals.
- Applications - why and where?

Seal Failure Analysis

- Safety requirements
- Why is this function required?
- Wear and seal life
- Seal face flatness
- Fluid film
- Heat generation
- Examination Procedures
- Practical Examples

If you have any questions or want to know more information please contact us.

Tel: 01709 369966 Email: training@aes seal.co.uk

AESSEAL plc, Global Technology Centre, Mill Close, Bradmarsh Business Park, Rotherham, S60 1BZ.

Advanced Pump Training

For industries that seek increased Mean Time Between Failure, improved process availability and reduced unplanned outages whilst reducing maintenance and purchasing costs.

This training course gives an in-depth understanding of all aspects of rotating equipment and helps operators to effectively troubleshoot costly equipment reliability issues.

Course overview

The course is designed to give delegates an understanding of all aspects of rotating equipment and help them effectively troubleshoot costly equipment reliability issues. It also gives an in-depth understanding of the links between mechanical seal, bearing and pump failures.

Who should attend

The course is suitable for plant managers, pump repairers and senior engineering staff involved in maintenance, design, reliability, production and operations, etc.

Key learning outcomes

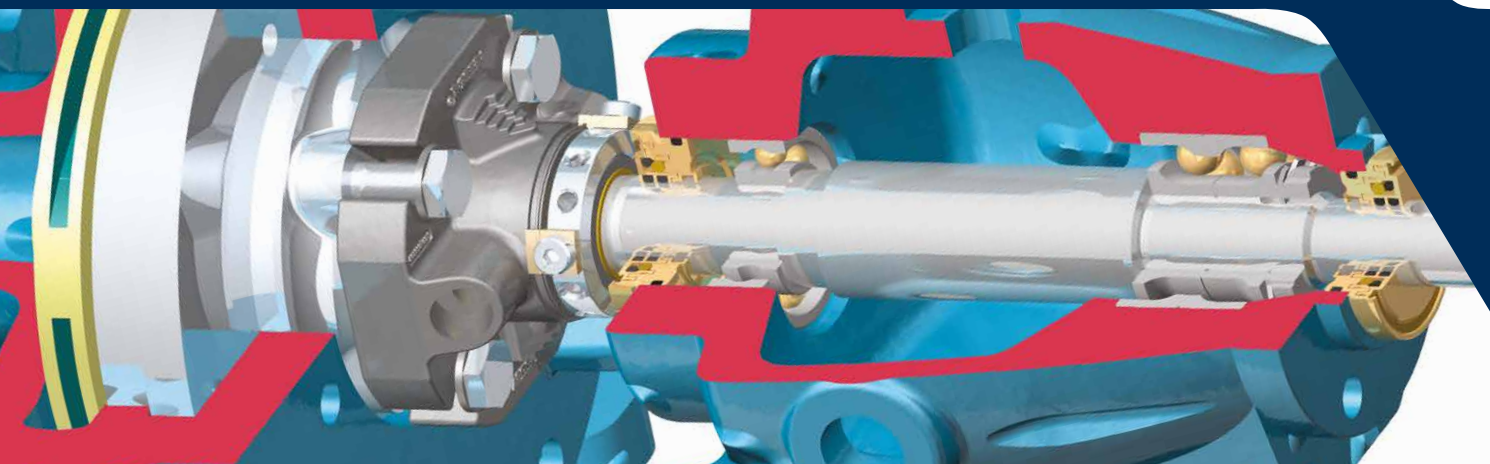
- The importance of correct equipment selection
- On-site operating practices and their effect on mechanical seal and bearing reliability
- Cost effective techniques to improve process availability
- The benefits of creating pump purchasing standards to improve mechanical seal life
- The common objective between production, maintenance and purchasing
- The reasons for selecting particular maintenance strategies
- The value of a specialist troubleshooting team to implement focused improvements



NORTHUMBRIAN
WATER *living water*

“Thanks to training from AESSEAL® I now have a better understanding of mechanical seals and their function within a pump. The trainer was friendly, experienced and very knowledgeable. I have changed how I operate which has improved my practices and processes.”

Maintenance Engineer, Northumbrian Water



Course Content

The course helps people improve root cause failure analysis of the complete system, in order to improve equipment reliability, as well as improving troubleshooting techniques through the use of case histories and group discussion.

Introduction to Pumps

- How long should pumps and seals last?
- What do seals need for good life and why do they fail?
- What is a pump?
- Pump classification.
- Impeller types and specific speed.
- Pump nomenclature.
- Fluid terminology.

Creating Pump Standards

- Stuffing box and seal chamber designs.
- Estimating stuffing box pressure.
- Problems with low pressure stuffing box designs.
- Impeller clearances and efficiency.
- Single and double volutes.
- Bearing arrangements.

Importance of Correct Installation

- Motor and shaft alignment.
- System piping problems and their effect.
- Understanding the significance of correct suction piping.
- Pump installation "Rules of Thumb".

Head, flow and electrical consumption, The "Affinity Laws"

- Calculating NPSHa.
- Understanding the effects of temperature change.

Pump Terminology, Understanding Head and Cavitation

- Converting head to pressure.
- Creating simple system diagrams and specifying pumps.
- Understanding pump curves.
- Understanding head and pressure relationships.
- Understanding shaft deflection and stop start pumps.
- What causes hydraulic radial load?
- Understanding cavitation.
- Differentiating cavitation damage marks.
- Avoiding cavitation.

Understanding Oversized Pumps

- How did we end up with oversized pumps?
- Problems with oversized pumps.
- What are the operating costs of oversized pumps?
- Estimating shut-off head.
- Trouble shooting oversized pumps and the "Three Gauge Method".
- Problems with using variable speed drives.
- Calculating the "First Critical Speed".

If you have any questions or want to know more information please contact us.

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www.aesseal.com/en/services/training

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