

EFFECTIVE MAINTENANCE OF HYDRAULIC SERVO SYSTEMS



A TWO DAY COURSE TO HELP YOU ELIMINATE EXPENSIVE DOWNTIME AND REPAIR COSTS IN YOUR HYDRAULIC PLANT

The downtime of machinery causes delays which has implications on customers, costs and often can be traced to simple causes such as contaminated fluids. Moog estimates that the root cause of 90% of their servo valve repairs is due to poor system maintenance.

Moog and the National Fluid Power Centre have formed a professional training partnership to provide hands-on training for those involved in the maintenance of servo controlled systems.

About Moog

Moog was the first company to produce the commercial servovalve and has over 50 years of experience on building and maintaining them to original specification to retain their efficiency.

About NFPC



The NFPC is recognised by the British Fluid Power Association, and its hydraulic training courses are designed for everyone from non-technical staff through to personnel that are involved in the maintenance, management and design of fluid power systems.

Why you should attend

- Develop a proactive and effective maintenance schedule through a better understanding of your system and its needs.
- Work with confidence on your system through practical hands-on experience and advice from the NFPC.
- Dramatically reduce costly breakdowns by understanding the true significance of contamination and learning to control it.
- Protect the safety of you and your colleagues by learning about the current best practices and legislation in the industry.
- Increase the reliability of your system by learning how to select the right components for your system, and when to replace them.

Who should attend

This course is aimed at those involved in the maintenance and management of fluid power systems involving servo control and anyone considering introducing a system to their business.

It is assumed that the learner will have a basic knowledge of fluid systems. Attendees will receive a comprehensive set of course notes, Moog technical literature and Certificate of Attendance.

Course Duration: 2 days

Dates/Location

23 & 24 June 2009
22 & 23 September 2009
15 & 16 December 2009

All courses will be delivered at the NFPC, Carlton Road, Worksop Nottinghamshire S81 7HP
www.nfpc.co.uk

Cost per candidate: £725 + Vat

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Course Outline

The Real Hard Facts about Contamination

- Acquire the real hard facts associated with ingress such as percentage failures and costs likely to be incurred.

The Business Benefits of Good Maintenance

- Understand the business benefits of good maintenance, such as performance, availability, services and costs, and become aware of what constitutes a good maintenance routine.

Most Common Maintenance Issues

- Learn about the most common maintenance issues by focussing on staff knowledge, their skills and competence.
- Value the importance of contamination control and apply the control procedures associated with all maintenance operations.
- Know the effects of poor maintenance on system and component performance, and the results of failing to adhere to manufacturer's recommendations.

The Origin and Nature of Contaminants

- Gain knowledge about the origin and nature of contaminants, such as what they are, where they come from and what actions can be taken to reduce ingress.



The Effects of Contamination

- Understand the effects of contamination on hydraulic fluid such as performance and life, and understand how micronic size can affect component performance ranging from catastrophic failure to internal wear, leakage, heat generation and poor performance.
- Learn about valve sensitivity in servo and industrial valves and how it affects performance.
- Become acquainted with the golden rules for reliable servo systems, and learn when to replace components.

The Benefits of Using the Right Oil

- Recognise the value of using the right oil and understand its characteristics and performance of the oil in use, and the importance of good oil storage and transfer procedures.

The Importance of Oil Cleanliness

- Review manufacturer's and BFA guidelines and understand the importance of establishing a system target cleanliness level with regard to the requirements of servo valves.

Methods of Measuring Fluid Cleanliness Levels.

- Establish the present cleanliness levels of your system and look at the methods available with pros and cons for options for measurement such as bottle sample and microscopy, through to online/offline monitoring systems and the use of APCs.
- Interpret all the standards such as ISO 4406, NAS 1638 and SAE 4059E and become familiar with the actions to be taken.

Health and Safety

- Gain valuable knowledge on how to handle hydraulic fluid and follow risk assessment profiles, wearing the right clothing and following safe working practices.

The Use of filters

- Learn how filters perform, the types, location and effectiveness, with reference to the Beta Ratio and dirt holding capacity.
- Become aware of their performance relating to differential pressure and bypass or non bypass, and the action to be taken to maintain required cleanliness levels.

The Importance of the Flushing Process

- Become familiar with the term flushing and with reference to flushing plates, the parts of a system requiring this process.
- Know how the flushing process is achieved and become familiar with the basic formula used by engineers to establish flushing flow rates.

Course Objectives

On the completion of this course the delegate will have a greater understanding of the:-

- Origins of contamination and actions to be taken to minimise ingress.
- Factors that affect system and component performance.
- Symptoms associated with changes in performance.
- Importance of implementing and maintaining effective contamination control systems.
- Ability to translate the relevant data associated with contamination control.
- Fundamental principles that underpin the operation of all systems.
- Ability to read and interpret hydraulic circuit diagrams.
- Importance of establishing clean and safe working procedures.

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