Focus on Filtration Training

Hydraulic Filtration

Never Stop Learning

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker

ENGINEERING YOUR SUCCESS.

Never Stop Learning

Making a commitment to the future by providing training today.

Achieving measurable success from our training programme.

No other filtration company offers as many filtration system solutions as Parker and that is why our training programmes have to be both thorough and up to the minute in terms of content and value to industry.

Because we run our workshops throughout the year, you can always plan your attendance well in advance, eliminating the inconvenience of the last minute panic of finding a stand-in.

Should your organisation plan to have a number of people attending our training, we can come to you! - Imagine professional training, tailored to your requirements, at a time and at an agreed location to suit you. Wherever the training is needed, we will do our best to accommodate your needs.

Efficient workshops generate questions and develop the answers, this is what our training is all about. With interesting and effective group activities, time spent hands-on and regular reviews to keep a check on progress, getting the most from our workshop is made easier.

Parker Innovations – Knowledge made easy

At Parker we're committed to providing on-going knowledge and support.

To keep ahead of ever-changing industry requirements we've developed a range of interactive support tools, specifically developed by Hydraulic Filter Division Europe to provide information and insight into HFDE products and technologies.

Hydraulic & Lube Filtration On & Offline Filter Selector

Visit **www.filterselector.com** and register today for the HFDE hydraulic and lube filter selector. There is also a downloadable, offline version to install and use when there is no internet connection available.

E:Learning - Parker online knowledge at your fingertips

HFDE's online 'E:Learning' training modules at **www.parkerhfde.com/elearning** is the first place to go for anyone searching for web-based hydraulic filtration training and personal development.

Par Fit™ Selector and Tool Kit - On & Offline Tools

Visit **www.parker.com/parfit** to use the online Par Fit interchange element selector to identify the right Parker element. The offline Par Fit Tool Kit incorporates a version of the element selector, Element Expert - a visual, dimensional element indentification tool and the OEM apps tool - linking Par Fit part numbers to OEM part numbers by market and machine type.

Fluid Condition Monitoring - Apple App

The unique HFDE Condition Monitoring AppStore app is available to download free onto your iPhone, iPad or iPod Touch and offers two valuable calculation tools to help reduce the risk of equipment downtime. The ISO Generator assesses the ISO cleanliness of a system and the frequency calculator gives a system monitoring frequency.

Total System Health Management

Knowing how clean the oil is...

Parker's Hydraulic Filter Division looks beyond the customary solutions to a flexible approach in preventing breakdowns and extending the lifetime of components in hydraulics and lubrication systems.

We believe that prevention starts with knowing how contaminated a hydraulic system is and then knowing how best to keep it clean.

We are committed to providing training workshops for employees and customers to stretch their knowledge and understanding of filtration systems, applications and products.

We take great pride in delivering high quality training that covers all aspects of Hydraulic Filtration and Contamination Control.

Training for the future

Within Parker Filtration and within the whole of Parker Hannifin for that matter, training on new technologies and tomorrow's products is an essential part of our 'learning philosophy' for our customers and Parker people.

Fluid Condition Monitoring

A working knowledge of contamination monitoring is, we suggest a vital component in understanding system contamination control.

The science and practicality of monitoring particulate has moved on a long way from the days of 'Clear and Bright' visual tests and at the advanced workshop, delegates will receive actual hands-on experience using condition monitoring equipment, troubleshooting and output to peripheral devices.

Contamination control of hydraulic systems is essential. A fact proven many times over by Parker Filtration in answering the demands of industry for effective fluid condition monitoring.

With at least 85% of hydraulic system failures the result of contamination, equipment downtime due to unplanned maintenance is always expensive and personnel safety becomes an issue.

E:Learning...The essential first step...

We recommend that any potential workshop delegate should first register online to our E:Learning modular training website at **www.parkerhfde.com/elearning** and complete the 8 excellent, interactive modules and QA sections.

These are fun and informative and will not take too long to complete.

Workshop timetable

Our workshops are run on a regular basis in The Netherlands and the UK.

Booking parts 2 and 3 at the same time will ensure your preferred dates are guaranteed.

HFDE Training Workshop	Hydraulic Filtration Technology Part 2	Hydraulic Filtration Technology Part 3
23rd - 25th Oct 2012	Part 2 Location Bury St Edmunds, Suffolk, UK	
20th - 22nd Nov 2012		Part 3 Location Bury St Edmunds, Suffolk, UK
16th - 18th Apr 2013	Part 2 Location Arnhem, The Netherlands	
21st - 23rd May 2013		Part 3 Location Bury St Edmunds, Suffolk, UK
15th to 17th Oct 2013	Part 2 Location Bury St Edmunds, Suffolk, UK	
12th to 14th Nov 2013		Part 3 Location Bury St Edmunds, Suffolk, UK

Knowledge at your fingertips

Filtration Technology
Part 1 - E:Learning

To make the best start possible in our programme, we have made the 1st stage available in the easiest and most flexible way possible - as web based training!

By logging onto our E:Learning web site, anyone can gain almost immediate access to some of the best fluid hygiene training available anywhere.

Benefits

- Start the modules at a time or place to suit you and take as long as you like
- No time limitations
- Complete this stage one module at a time, or all at once
- We supply an official Parker certificate once the last module is completed

"This type of training is fantastic as we are based in Africa and not available for training sessions. All Service Centre staff have to complete the modules."

M van Eck (Parker Hannifin)

Primary Workshop	Content
Module 1 **Contamination Basics**	**Function & Purpose** **Primary Functions** - Energy Transmission - Coolong - Lubrication - Sealing
Module 2 **Contamination Sources**	**Sources & Consequences** **Particulate Shape** **How Do We Measure Particles?** **Relative Particle Sizes** **Other Contaminants** **Where Do Contaminants Come From?** **How Fast Do Contaminants Enter a System?**
Module 3 **How the Damage is Done**	**How the Damage is Done** **The Effect of Particulate Contamination** - Dynamic Clearance - Abrasive (3 body) wear - Erosive (2 body) wear - Adhesive wear - Fatigue (Stress) wear. - Fatigue (Stress) wear. - Corrosive wear - The Hidden Cost of Contamination
Module 4 **Water & its Effects**	**Water Sources** - Added - Ingested - Leakage - Worn Seals - Condensation **The Visual Effects** **Saturation Points** **Damage Caused** - Corrosion of Metal Surfaces - Acceleration of Abrasive Wear - Breakdown of the Fluid Additive Package - Viscosity Varience - Increase in Electrical Conductivity - Bearing Fatigue **Effects on Bearing life** **Water Removal**
Module 5 **Condition Monitoring 1**	**Why do We Take Samples?** **Flow** - Laminar Flow - Turbulant Flow **Localising Problems with Oil Analysis** - Primary Sample Points - Secondary Sample Points - Tertiary Sample Points **Dynamic Oil Sampling** - Laminar - Turbulant
Module 6 **Condition Monitoring 2**	**Localising Problems with Oil Analysis** - On-line Sampling - In-line Sampling - Off Line - Comparison of Each Method
Module 7 **Condition Monitoring 3**	**Understanding Reporting Standards** **ISO Standard** - Counts - Understanding the Code - Example Analysis **The NAS Standard** - Counts - Understanding the Code - Example Analysis **The SAE Standard** - Counts - Understanding the Code - Example Analysis - Comparison of Each Method
Module 8 **ParFit**	**What is Par Fit?** **What is a Cross Reference?** **Using the Par Fit Cross Reference**

Understanding the fundamentals

Filtration Technology
Part 2 - Workshop

Designed to follow on from the E:Learning programme, this workshop takes delegates deeper into the world of dirty fluids and system failures.

During this time together, we will discuss what is happening and how it can be stopped.

We will consider the idea that unplanned failures are not something to be endured, but, a phenomenon that can be eliminated - Catastrophic failure can be avoided.

Benefits

- A deeper understanding of what is happening in a working fluid system
- A better understanding of how to prevent unplanned breakdowns
- A greater understanding of how to improve system efficiency & effectiveness and, as a result, profitability
- Understanding the primary Parker tools designed to maintain system cleanliness

Primary Workshop	Content
Introduction Potential Follow-up Plan E:learning Review Filter Media Selection	**Cross Pollination of Ideas to Use** **Review E:learning** **Application Exercise** **Filter Media Selection** - Selection or Estimation - Selection Exercise
Filter Media Types	**Surface** **Depth** **Efficiencies** - Beta Ratios - Efficiency
Filter Element Life	**Contamination Loading**
Filter Maintenance	**Why Maintain Filters?** **Filter Maintenance Exercise**
Fluid Cleanliness Standards	**The ISO Standard** **Typical Component Cleanliness Levels** **Factors that Affect the System** - Reliability Penalty Factor - Contamination Severity Factor - Target Cleanliness example
Filter Housing Selection	**Selection Criteria** **Bypass** **Bypass / Indicator Relationship** **Indicators** **Filter Sizing** - Delta P - Filter Sizing Example
Types & Location of Filters	**Air Filters** - Breathers - Large Breathers - EAB - ABL - Advantages - Disadvantages **Suction Filters** - Suction Filters - Suction Strainers - Advantages - Disadvantages **High Pressure Filters** - What are Pressure Filters? - Features - Materials of Construction - Primary Design Features - Advantages - Disadvantages **Medium Pressure Filters** - What are Pressure Filters? - Features - Application Example - Materials of Construction - Primary Design Features - Advantages - Disadvantages **Return Line Filters** - What are Return Line Filters? - Features - Materials of Construction - Primary Design Features - Advantages - Disadvantages **Off Line Filters** - What are Off Line Filters? - Advantages - Disadvantages **Conclusions** **Recommendations**
New Products	
The Competition	**Parker** **Primary Competitors** **Application Exercise; revisit** **Our competitors part numbers revealed**
Filter Specification	**Here we work together to specify filters for applications**
Summary	
Final Thoughts	

Developing your skills

Filtration Technology
Part 3 - Advanced Workshop

In this, the last of our workshops, we try to take a positive path, looking at the ways in which filter media works.

There are a number of factors, working together, that allow the media to perform well and we discuss some of the laws that relate to the performance of the media.

We ask the question: What is an hydraulic system? And then go looking for the answer.

Benefits

- A deeper understanding of filter media allows informed decisions to be made
- Understanding the causes of failure will mean you have a better understanding of how to prevent them
- Prevention is better than cure
- Understanding the primary Parker tools designed to maintain system cleanliness

"Together, we have delivered an excellent programme of the highest quality."

Ian Wearne
Training and Development Manager, Brammer UK

Primary Workshop	Content
Introductions	
Potential Follow-up Plan	Cross Pollination of Ideas to Use
Fluid Cleanliness Standards	The Effect of Particulates
Principles of Filtration	Contamination Basics Application Example Media Migration Laws & Principles - Van der Waals Law - Brownian Motion - Review
Hydraulic Systems	What is an Hydraulic System? The System Components What is the System for?
Fluids	Selection In Use Disposal Where We Fit In
Contaminants	**What Are Contaminants?** **Particulates** - Particulates - What do Particulates Do? **Water** - Water - Lifetime Extention Factor - Karl Fischer - Oil in Water Monitor **Air** - What is Air? - How do We Prevent Air Ingress? - How do We Prevent Air Damage? **Cavitation** - What is Cavitation? - What causes Cavitation? - How Can We Prevent Cavitation? **Measurement & Control**
Types of Filters	**Barrier Type Filters** - Definition - The Simplicity - Design
Fluid Cleanliness	**Fluid Cleanliness Standards** - The ISO Standard **The Effect of Particulates** - Exercise - The ISO Lifetime Factor
Applications	**Application Exercises** - Industry Based Applications that require a Solution - Winch System - Winch System pt II - Ground Support Trolley - Ground Support Trolley pt II - Power Units - Lubricating Oil System - Hydraulic Power Units - Par Fit - Large Crane - Light Forklift Truck
Summary	
Final Thoughts	

Customer One-Day Workshop

This workshop has been designed to help our customers develop a sound basic understanding of contaminants within pressurised fluid systems.

Being able to understand the real cost of contaminated fluid is emphasised and the methodology for reduction and prevention of contamination ingress is discussed.

Designed to help our customers maintain a working fluid hygiene programme, this workshop will aid the reduction of system costs.

As part of our commitment to our customers, we will be running a number of training courses in Asia and have included Singapore and Shanghai as primary locations for 2 of these workshops.

Benefits

- Improved ability to identify contaminants and their 'footprint'
- Reduced cost resulting in improved profitability
- Prevention is better than cure
- Understanding the primary Parker tools designed to maintain system cleanliness

"Understanding the impact on downtime caused by contamination and the need for particle monitoring was very useful."

OEM Customer

Primary Workshop	Content
Objectives	My Objectives for the Day MRO Strategic Proactive Maintenance Direct Costs of Ownership Hidden Costs of Breakdown Filter Lifetime Running Costs
Contamination	Particulates
ISO Standard 4406:99	The ISO Code ACFTD v ISOMTD ISO Classes Lifetime Cleanliness Reliability Penalty Factor Contamination Severity Factor Target Cleanliness How Clean is New Oil?
Cleanliness & Contaminants	What Do We Mean by a 'Clean System?' Where Do Contaminants Come From? What Do Contaminants Do? Wear & Tear
Filtration	Why Should Oil be Filtered? Selection Criteria Viscosity
Which Filter Should I Use	Sizing Media Beta Ratios Efficiency Filter Locations Dirt Holding Capacity Indicators
Contamination Types & Sources	Particulates Water - Heat - Catalytic Effect Air
Condition Monitoring	Proactive Maintenance Types of Oil Analysis Dynamic Oil Sampling Sample Frequency Generator
Hydraulic Fluids	Types of Fluid Can You Afford Leakage? Handling & Storage of Fluid
Important Points	
Root Out Your Problems	
Proactive Maintenance	
The Effect of Particulates	Exercise

Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates,
Dubai
Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt
Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy
Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budapest
Tel: +36 1 220 4155
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7272 505 800
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker
Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev
Tel +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick
Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

US – USA, Cleveland
Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

CN – China, Shanghai
Tel: +86 21 2899 5000

HK – Hong Kong
Tel: +852 2428 8008

IN – India, Mumbai
Tel: +91 22 6513 7081-85

JP – Japan, Tokyo
Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul
Tel: +82 2 559 0400

MY – Malaysia, Shah Alam
Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

SG – Singapore
Tel: +65 6887 6300

TH – Thailand, Bangkok
Tel: +662 186 7000-99

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos
Tel: +55 800 727 5374

CL – Chile, Santiago
Tel: +56 2 623 1216

MX – Mexico, Apodaca
Tel: +52 81 8156 6000

European Product Information Centre
Free phone: 00 800 27 27 5374
(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

Catalogue FDHB809UK 06/2012

Parker Hannifin
Hydraulic Filtration Training Information:
Email: acrane@parker.com
Tel: +44 (0) 1842 756304

Your local authorized Parker distributor