

Introduction to seals and sealing

Two day short course by Robert Flitney

Airspace Conference Centre
Imperial War Museum
Duxford, Cambridgeshire, UK
29-30 March 2011

Fluid sealing is fundamental to the safety and reliability of virtually all equipment from domestic goods through to major process plant.

The advances in seal designs and materials that are continuously occurring could provide:

- Significant increase in reliability
- Dramatic cost savings in assembly.
- Improved compliance with emission requirements.
- Perhaps a combination of all three of the above.

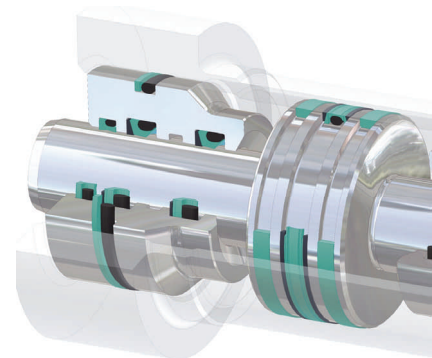
This course will introduce the major types of seals available. It will describe the most popular types of static, rotary and reciprocating seals, the basic methods of operation, critical parameters to be considered for successful sealing and key material types. The limitations of individual designs and materials will be discussed.

Specific time is also set aside for discussion of individual questions and areas of interest.

Who should attend?

The course will be of interest to engineers in practically any industry. It will be of particular relevance to:

- Design and development engineers.
- Plant maintenance and operations engineers.
- Business development and marketing engineers.
- Graduate trainees.
- Recent recruits to the sealing industry.



Course programme

Introduction to Sealing Technology and economics of sealing

Examples of applications, comparison of seals and bearings, general overview of sealing, summary of fluid sealing literature sources.

Introduction to elastomer and plastic static seals

A general introduction is given to static seals, based on O-rings and other elastomer seal sections. Discussion of sealing mechanism, groove design, critical design parameters, extrusion, surface finish and temperature considerations. Discussion of the additional considerations required for plastic and metal seals.

Elastomer and plastic seal materials

Key properties of elastomers and plastics for sealing, types of elastomer and plastics used. Important properties for sealing, choosing an elastomer for service.

Introduction to Surface Texture measurement and parameters

A summary surface texture measurement and the main parameters that may be encountered.

Compression packing

An introduction to compression packing for rotary, reciprocating and valve applications, construction, uses, assembly and running in, plus the main types of materials used.

Rotary elastomer and plastic seals

Elastomer and plastic lip seal design and sealing mechanism. The basic variants, operating parameters and limitations. Elastomer and plastic seals that may be used for higher pressure rotary applications.

Bearing seals and excluders

An introduction to the seal designs used for bearing protection in different environments

Reciprocating seals

Method of operation, important aspects of the seal design, seal operation and performance, pressure actuation, lubrication and friction. Equipment design factors, surface texture, installation, and tolerances.

Mechanical seals

The basics of seal design and methods of operation. Seal types and typical areas of application. The specific requirements of different industries and applications and the main materials that may be used.

Gaskets

An introduction to gasketed joints, and the important differences between these and static sealed joints covered earlier. Main categories of gasket, importance of bolting, gasket materials and application areas.

Clearance seals for rotary applications

An overview of the clearance seal designs that are used in a range of industries from solids handling pumps to machine tools and turbo compressors. The advantages and disadvantages of different designs.

Seal failure scenarios

Some examples of typical failures from static and dynamic seal applications. Also some less obvious failure modes.

Question session and problem solving

A period at the end of each day will be set aside for general questions, potentially a design exercise to help reinforce some aspect of the course and to discuss any individual problem areas

Course notes

Each delegate on the course will receive a copy of the 'Seals and Sealing Handbook, 5th Edition' (recommended retail price £120) and a folder of the course presentation material.

Venue



The course will be held at the Airspace Conference Centre at the Imperial War Museum (IWM), Duxford, Cambridgeshire, UK. This conference and course centre opened in 2007 and is part of the Airspace Hanger at the museum. Course delegates will have complimentary access to the museum for the duration of the course. Opening hours are until 18.00 each day. The IWM is situated immediately adjacent to Junction 10 of the M11 motorway. Stansted Airport is approximately 15 miles to the south.

For map see: <http://duxford.iwm.org.uk/server/show/nav.00d002001>

Accommodation

A number of local hotels are available in the surrounding villages, Cambridge or Stansted Airport. Details can be provided on request.

Course fee and Registration

The price includes:

- Two full days attendance at the course
- Copy of the Seals and Sealing Handbook
- Set of course presentation notes
- Refreshments and buffet lunch on both days
- Access to the museum during breaks and at the end of the course each day

Sponsoring organisations

The following industry associations are supporting this course and member companies are entitled to the discounted fees detailed below.

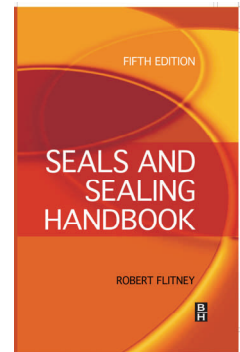
British Fluid Power Association (BFPA)
British Valve and Actuator Association (BVAA)
European Sealing Association (ESA)
The Pump Centre.

Course fee	£550.00
Members of BFPA, BVAA, ESA or Pump Centre	£500.00
Early bird registration before 21 January 2011	£475.00

No VAT will be charged.

Course Presenter

Robert Flitney CEng MIMechE gained early engineering experience in the operation and maintenance of power and process plant in the marine and frozen food industries. This was followed by 35 years of contract R&D on Fluid Sealing Technology at BHR Group, including fundamental experimental studies of both dynamic and static seals, wide ranging consultancy projects and collaborative industrial projects, undertaken to assist both manufacturers and users with the development of realistic and meaningful test procedures together with improved prediction of seal performance. He has authored or co-authored over 50 papers presented at international conferences, and has been invited to provide keynote presentations at Sealing Seminars. He also authored the Seals and Sealing Handbook, 5th Edition, provided to all delegates on this course. Current activities include consultancy and editing Sealing Technology, an international monthly newsletter for industry.



For further information and to register contact Robert Flitney:
Tel: +44 (0) 1799 501659
Email: robert.flitney@ntlworld.com
or download brochure at:
www.flitney.co.uk

REGISTRATION FORM

INTRODUCTION TO SEALS & SEALING

29-30 March 2011

Please return to: R.K.Flitney
66 De Vigier Avenue, Saffron Walden, CB10 2BN, UK

Delegates

No	Title	First name	Surname	Position
1				
2				
3				

Company

Company name	
Address	
Telephone no	
Email	

Course fees

Standard course fee	£550	
Members of BFPA, BVAA, ESA or Pump Centre	£500	
Early bird registration before 21st January 2011	£475	

Method of payment

VAT is not payable

Cheque made payable to R.K.Flitney for
Credit card Visa/MasterCard, details below

You may prefer not to send your credit card details, if so you can call Robert on 01799 501659

Credit Card

Visa / Mastercard / Delta / Switch

Card number

Name on card

Address at which the card is registered

Expiry date

Security No.

Signature

Cancellations

Cancellations up to 4 weeks prior to the start date will be given a 90% refund.

Four weeks to 10 days notice 20% refund.

Less than 10 days, regrettably no refund can be made.

Please advise us of any special dietary or access requirements.