

# Distillation

21 – 23  
September 2011  
London  
[gtforum.com/distillation](http://gtforum.com/distillation)



**Key topics:**

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- Development of fractionation
- Column types
- Simulation packages
- Column internals
- Critical design aspects
- Control
- Inspection
- Column cleaning and pyrophoric fires
- Troubleshooting Case Studies
- Q&A Session

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Training  
Meetings of minds

## Introduction

The ERTC Distillation course covers the key areas of fractionation from assessing the design of the internals through to their eventual installation and operation with the emphasis placed on practical aspects. The topics cover skills and knowledge training from a viewpoint that can be obtained only by 'hands-on' experience.

The course will give participants a thorough understanding of the key elements associated with the design, installation, operation, control and troubleshooting of distillation columns. It will address practical issues which will enable engineers to make a positive and definable economic contribution to their company profits.

## Who should attend?

The ERTC Distillation course is a comprehensive core skills course for professionals dealing with all aspects of the Distillation Unit.

The course will be highly valuable to all engineers involved in the operation and design of Distillation facilities. Additionally, the course will be useful to any technical personnel wishing to gain an insight into the practical aspects of Distillation. Those who are experienced in other fields and seek a review of the fundamentals of Distillation will also find this course most beneficial.

## Learning objectives

Upon completion of this course, participants will have gained a good understanding of the key elements associated with column hydraulics and the design of modern internals, installation of all types of internals, operation and troubleshooting of distillation columns also includes common problems associated with simulation and phase equilibria, pyrophoric fires, installation disciplines and the structured approach to troubleshooting.



## Course description

Distillation is still the most widely used means of separating chemical species in the petroleum and chemical industries and is the first unit operation in an oil refinery.

This course covers the key areas of assessing the design of the internals through to their eventual installation but with the emphasis placed on aspects seldom taught. It is not a Chemical Engineering 'refresher' course, but rather seeks to cover topics from a practical viewpoint that can be obtained only by hard won experience.

Various aspects relating to the initial design of column internals are covered. Current internals are reviewed including critical design aspects of trays, packings and ancillary equipment. The occurrence and avoidance of pyrophoric fires in columns, and the in-situ inspection requirements of all internals,

are included. The philosophy and approach to troubleshooting is discussed leading on to a review of numerous first hand troubleshooting examples, each demonstrating a significant problem area.

The course is designed to open the mind to the wider issues of column internals and to the maintenance of the design performance over the cycle life of the unit.

The course is designed to complement and supplement material presented in other ERTC conferences and training courses.





## Course programme

### Wednesday 21 September

#### Introduction

Basics of distillation / Relationship between energy and capital cost / Separation influences / Stage efficiency / Design envelopes / Design accuracy and consequences / Design procedures / Feeds / Thermal cracking / Product specs

#### Specific Distillation – crude oil distillation

Crude characterization / Unit layouts / Heat and mass balance / Separation criteria / Process monitoring / Contaminants / heater / Overflash / Corrosion/metallurgy

#### Specific Distillation – residue vacuum distillation

Column layouts / Trouble free wash zones / Deep cut appraisal / Coking / Avoiding damage

#### Other columns

Critical simulation factors

### Thursday 22 September

#### Column Internals

Understanding critical aspects of trays / Packings and associated internals

#### Column Internals

Review of current trays and packings / How they work

#### Column Inspection

Understanding why it is critical / What to look for (trayed and packed columns) / When to inspect / Communication

### Friday 23 September

#### Pyrophoric Fires

Why they occur / Damage caused / Cost of fires / Avoidance / Column clearing

#### Troubleshooting

Philosophy and approach / Diagnostics using tracers and radioactive techniques / Interpretation / Numerous case histories

#### Q&A Session

Including delegate's own problems

Registration will start at 8.30am on Wednesday 21 September and the following days will start at 9am. All three days will end at 5.30pm.



## Training course fee (per delegate)

For bookings received before 12 August 2011 Course Fee = **£1850 +20% VAT**  
A late booking supplement of £200 +20% VAT will be applied to all bookings received after 12 August 2011.

## Reservation form

Please make a reservation for the following delegate:

Title	First name
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Surname	
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### 5 easy ways to book

**1**  
Register online at:  
gtforum.com/distillation

**2**  
Email us at:  
training@gtforum.com

**3**  
Complete and return  
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## 2011 Course listings

### **Wastewater treatment**

19 – 21 September 2011, London  
[www.gtforum.com/wastewater](http://www.gtforum.com/wastewater)

### **Technology selection and implementation**

22 – 23 September 2011, London  
[www.gtforum.com/technology](http://www.gtforum.com/technology)

### **Hydrocracking**

11 – 13 October 2011, London  
[www.gtforum.com/hydrocracking](http://www.gtforum.com/hydrocracking)

### **Energy efficiency**

9 – 11 November 2011, London  
[www.gtforum.com/energy](http://www.gtforum.com/energy)

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For more information, please visit  
the individual website listed above  
or send us an enquiry via  
**[training@gtforum.com](mailto:training@gtforum.com)**



## Course presenter

**Derek Reay** is an independent consultant who specialises in the design, inspection, matters relating to the installation of column internals, and in factors which influence their sustained operation to ensure that the intended design performance is realised and maintained in practice. He is known internationally as a specialist in these disciplines and has accumulated an extensive knowledge of troubleshooting column performance.

He has worked in various areas of BP including Research, Engineering and Refining. He held the post of Engineering Associate within BP Engineering during which time he successfully designed the world's first all-structured packed lube vacuum column. As Section Head of Separations within the Refining and Technical Development Division of BP Oil he led a group of professional engineers providing technical services to the

Group's refineries world-wide and those of numerous third parties with whom a technical agreement was in place. As part of this group's activities he initiated extensive in-house research into practical column internals. He revised and extensively updated the BP Standards in Column Internals.

He was appointed to the role of Senior Process Consultant within BP with the dual remit to act as consultant to BP in separations and to develop ways to improve the economics of distillation columns.

He has chaired both the Design Practices Committee for the USA based industrial research organisation Fractionation Research Inc and the Fluid Separations Subject Group of the IChemE. He was an invited author for the International Encyclopaedia of Heat and Mass Transfer (1997). He is a Fellow of the Institution of Chemical Engineers.





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