

# Distillation Debottlenecking & Optimisation

A Eurotek training course



## ERS Distillation Debottlenecking & Optimisation

### An introduction:

Refining of crude oil and the recovery of saleable products from the many processes in oil and chemical sites rely heavily on distillation units. Although in some respects distillation technology is fairly mature, today there remains considerable opportunities for improved optimisation utilising the latest technology in process simulation, advanced control and equipment design. Such is the scale of the refining and chemical distillation processes, even relatively small incremental improvements in efficiency and reliability, for a single unit, can generate benefits of many millions \$/yr. This course will provide participants with a thorough understanding of the fundamentals of distillation. Practical methodologies for unit optimisation and design will be discussed and illustrated via case studies. These optimisation principles and practices will be transferable to the participants' sites and locations, and indirectly should be highly beneficial to the bottom line of their operations.

### Learning objectives:

This course will cover all the main areas relating to distillation operations from basic principles to design and optimisation. There will be strong focus on using case study examples to identify opportunities to improve and revamp existing operations. Optimisation methods will be presented which should allow the participant to apply these methods and learnings at their own sites. Some of these optimisation tools will ultimately require the use of a process simulator in order to accurately estimate yield benefits. However, for this particular course, optimisation principles will be covered and the participant will not be required to use or access a simulation package.

Other areas covered in this course which should add value to participants' operating sites include: preparation for turnarounds; column internals installation and inspection checks; troubleshooting methodology.

Upon completion of this course participants will have gained an understanding of:

- basic principles affecting all distillation columns
- key factors for unit optimisation
- importance of using simulation for quantifying optimisation opportunities
- when to use trays or packed internals
- key monitoring activities for a unit engineer
- specific process safety issues relating to distillation units
- how to plan for a turnaround and identify possible unit revamps
- how to carry out a unit internals inspection
- how to troubleshoot a unit
- the design methodology for a new column



## Who should attend?

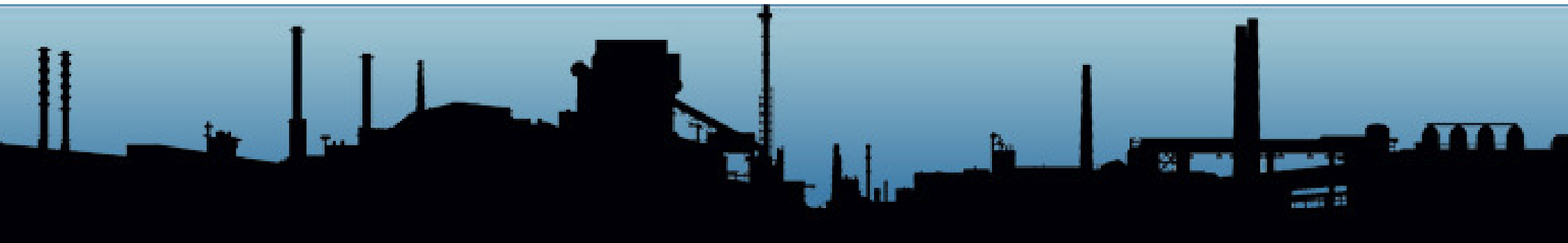
The ERS Distillation course is a comprehensive core skills course for professionals Distillation Unit. The course will be highly valuable to all engineers involved in the operation and design of Distillation facilities. Additionally, the course will be useful to any technical personnel wishing to gain 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 beneficial.

Job Titles/Functions Appropriate for the Course Include:

- Process, Project, and Plant Engineers
- Computer/System Analysts and Refinery Modelling Engineers
- Operations Economic Evaluators
- Product, Equipment, Chemicals, Supplies or Services Sales Personnel

## Course Presenter

This course will be presented by Stuart Fraser. Stuart was formerly head of the Separations Group in BP Refining for 13 years, and worked in a number of process engineering, simulation and technical roles in BP for over 30 years. He has extensive experience of distillation design, revamps, troubleshooting and optimisation. He is also an expert user of simulation tools. Stuart was formerly a member of FRI Technical Committee, and also Vice Chair of IChemE Fluid Separations subject group.



## Course programme

### Day 1

#### 1. Scale of distillation operations

typical number of units on a site  
typical energy requirements  
column sizes  
complexity (domino effects)  
example of the \$\$ benefits by optimisation

#### 2. Feed characterisation

feed characterisation for refining and non refining applications  
thermodynamic generators for simulation

#### 3. Refinery crude and vacuum Units

preheat systems  
desalting  
fired heaters  
side strippers  
pumparound zones  
partial pressure stripping steam

#### 4. Basic Principles of Fractionation

crude oil distillation units  
key factors affecting fractionation quality

### Day 2

#### 5. Column Internals

trays v's packing  
selection of optimal types of internals  
rating methods

#### 6. Simulation

importance of simulation  
simulation of plant data (process of matching existing operations)  
methodology for utilising simulation tools to add value to existing operations

#### 7. Gas plants

typical configurations  
key performance indicators  
simulation of these

#### 8. Main Activities for the Plant Engineer

safety and availability  
unit performance monitoring  
longer-term development of the unit  
interaction with other disciplines

### Day 3

#### 9. Optimisation Opportunities Refining, Chemicals and Upstream applications

case studies, open discussion and review of results

#### 10. Distillation Column Design design methodology

optimal feed location  
optimal location for temperature indicators (for control)

#### 10. Turnarounds

preparation for these  
column inspections : what to look out for and reporting templates

#### 11. Troubleshooting

methodology  
review of troubleshooting tools  
case history examples (open discussion)



**Registration form:  
Distillation Course:**

CCT Venues, 135-137 Aldersgate House, London EC1A4JA, UK.  
Please make a reservation for the following delegate:

Title \_\_\_\_\_ Given Name \_\_\_\_\_ Family Name \_\_\_\_\_  
Position \_\_\_\_\_ Company \_\_\_\_\_  
Address \_\_\_\_\_  
Tel: \_\_\_\_\_ Fax : \_\_\_\_\_ Email: \_\_\_\_\_

For Bookings Received before 16<sup>th</sup> April: Course fee £1950.00 + 20% VAT  
For Bookings Received after this date: Late Booking Supplement of £250.00 + 20% VAT will be applied

PLEASE NOTE: Payment to be made at time of reservation. If an invoice is required to make payment by bank transfer or cheque please email your request or Purchase order to [reservations@eurotek-refining.co.uk](mailto:reservations@eurotek-refining.co.uk) and an invoice will be emailed by return.

Make cheque payable to Eurotek Refining Services Ltd.  
Transfers to: Account Eurotek Refining Services Ltd IBAN No. GB91LOYD30987301811462

Cancellations, Substitutions & Programme Changes If you are unable to attend the course, you may make a substitution at any time. All substitutions and name changes must be received in writing by mail, e-mail, or Fax. For cancellations received by mail, e-mail or Fax 21 days before course start, 75% of the fees will be refunded. For cancellations received after this date course papers will be sent, but no refund. An official cancellation number must be obtained from Eurotek Refining Services Ltd to qualify for a refund. Course content may be subject to change at Eurotek Refining Services Ltd.'s discretion

**Course timetable:****16<sup>th</sup> May**

08.00 Onwards Course Registration  
09:00-17:00 Course Programme

**17<sup>th</sup> May**

09:00-17:00 Course Programme  
20:00 Course Dinner (free)

**18<sup>th</sup> May**

09:00-16:00 Course Programme

**Four ways to book**

1. Complete and return this form to: Eurotek Refining Services Ltd 389 Woodham Lane, Addlestone Surrey KT15 3PP UK
2. Telephone with details on: +44 1932 702914 or +44 1737 830077
3. Complete and return this form to: [Reservations@eurotek-refining.co.uk](mailto:Reservations@eurotek-refining.co.uk)
4. Visit our website at [www.eurotek-refining.co.uk](http://www.eurotek-refining.co.uk) and click on Registration Form.



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