

# Blending

7–9  
March 2011

London  
[gtforum.com/blending](http://gtforum.com/blending)



**Key topics:**

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**Product Specifications**  
**Calculating the Properties**  
**of Blends**  
**Valuation of Blendstocks**  
**Blending Technology**  
**Performance Monitoring**  
**Quality Giveaway**  
**The Cost of Getting it Wrong**

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Training  
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## Introduction

In order to comply with regulations and to optimise margins, refineries have to blend components of different qualities and values to meet stringent product specifications, without product 'giveaway'.

The relevance of product quality specifications will be covered in detail, along with calculation methods for estimating the qualities of blended products. This also includes gaining an understanding of the valuation of blendstocks and their relevance in producing products in the most economical way.

In addition the blending of biofuels with conventional components will be addressed, together with the different ways of blending at the refinery. Finally quality performance monitoring will be covered along with estimation of the cost of quality giveaway.

## Who should attend?

ERTC Blending is a comprehensive core skills course for professionals dealing with all aspects of the refining industry.

The course will be highly valuable to all engineers involved in the design, operation and troubleshooting of refining facilities. Additionally, the course will be useful to any personnel wishing to gain a perspective on refinery production planning and how the blending of products fits into the refinery economics.

## Learning objectives

Upon completion of the course participants should have a better understanding of why product blending is necessary, its importance in modern refining, and the impact on the economics of refining.

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## Course description

Blending is important both as part of the planning process to decide how to operate the refinery and also as a means to combine components to meet the refinery manufacturing specifications. This needs to be done safely, efficiently and most importantly economically.

This course gives an overview of the elements of the blending process and

provides an insight into the calculation of the most economical blends. The future changes in product specifications will be discussed along with the implications for the refiner.

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





## Course programme

### Monday 7 March

#### Introduction and Objectives

Outline course objectives / Icebreaker to introduce delegates / Course methodology – interactive lectures, discussion, individual and group exercises

#### Introduction to Product Blending

Why blending of products is necessary and important, and its impact on the economics of refining / Significance of specifications, testing precision, blending margins / Concept of linear and non-linear blending

#### Fuel Oil Blending

European and Bunker fuel specifications / Fuel oil test methods, significance for fuel performance, and critical blending parameters / Concept of Blending Indices / Fuel oil stability

#### Exercise 1: Fuel Oil Blending and Economics

Determine the optimum fuel oil blend, and then calculating the cost of correcting the blend / Valuing all of the potential fluxes

#### Jet Blending

Jet specifications / Jet test methods and significance for fuel performance / How CDU cut points change flash and freeze points

### Tuesday 8 March

#### Diesel Blending

European and US specifications / Diesel test methods, significance for fuel performance and critical blending parameters / Additives to improve cold weather performance

#### Exercise 2: Diesel Blending and Economics

There's more to it than just sulphur / How much LCO can be blended into diesel?

#### Bio-Diesel

A threat or a promise? / Green diesel, GTL

#### What happens if you get it wrong?

Fuel Oil, Jet/Avgas, Diesel

### Wednesday 9 March

#### Gasoline Blending

European and US Specifications / Gasoline test methods, significance for fuel performance and critical blending parameters / Oxygenates (MTBE and Ethanol) / US gasoline RBOB– will this happen in Europe?

#### Exercise 3: Gasoline Blending and Economics

Why is gasoline more difficult to blend in 2010 than in the past? / Calculate a blend to meet European spec gasoline when Ethanol is added at the depot

#### What happens if you get it wrong?

Gasoline

#### Feedstock blending

Why blend crude oil and how / Changing cutpoints vs blending components

#### Blending Technology in the Refinery

Software and systems for blending / Where does blend planning fit into the overall scheme / Tank farm hardware – Tank blending, in-line ratio control blending, in-line property control / Mixing, Sampling and analysis / Reblending and correcting

#### Performance Monitoring

If it's never off-spec then the margins are too big / The costs of quality giveaway and choosing the wrong components



## Training course fee (per delegate)

For bookings received before 4 February 2011 Course Fee = **£1999 +VAT\***. A late booking supplement of £300 +VAT\* will be applied to all bookings received after 4 February 2011. \*VAT to be charged at 17.5% until the 3 January 2011, after this date VAT charged will increase to 20%

## Reservation form

Please make a reservation for the following delegate:

Title	First name
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Surname	
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Position	
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Signature

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## 2011 Course listings

### Blending

March 2011, London  
[www.gtforum.com/blending](http://www.gtforum.com/blending)

### Improving refinery profit margins

March 2011, London  
[www.gtforum.com/refiningeco](http://www.gtforum.com/refiningeco)

### Introduction to refining

April 2011, London  
[www.gtforum.com/introrefining](http://www.gtforum.com/introrefining)

### Distillation

May 2011, London  
[www.gtforum.com/distillation](http://www.gtforum.com/distillation)

### Wastewater treatment

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

### Technology selection procedures

September 2011, London  
[training@gtforum.com](mailto:training@gtforum.com)

### Hydrocracking

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

### Catalytic reforming

November 2011, London  
[www.gtforum.com/reforming](http://www.gtforum.com/reforming)

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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

**Michael Sachs**, External Consultant.

Since 2002 Mike Sachs has been an associate consultant of KBC Process Consulting, and of CWA International Ltd, as well as an independent consultant to the petroleum industry, specialising in oil refinery and terminal operations.

He has given a range of training courses focused on tank farm operations. He has also acted as an expert witness in several civil cases involving potential operational negligence in oil refineries and terminals, including the high profile case of the Buncefield disaster in the UK in 2005.

From 1997 to 2002 he was a Vice President of KBC, acting largely in the same field. Prior to KBC, he was for 9 years General Manager of a European independent oil refinery, responsible for all aspects of the management of the corporation. Previously he spent 23 years with British Petroleum and 3 years with Statoil.

His wide experience includes Oil Refinery and Oil Terminal Operations, Planning, Engineering, Maintenance, Information Systems Development, Production Management, Business Development and General Management.





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