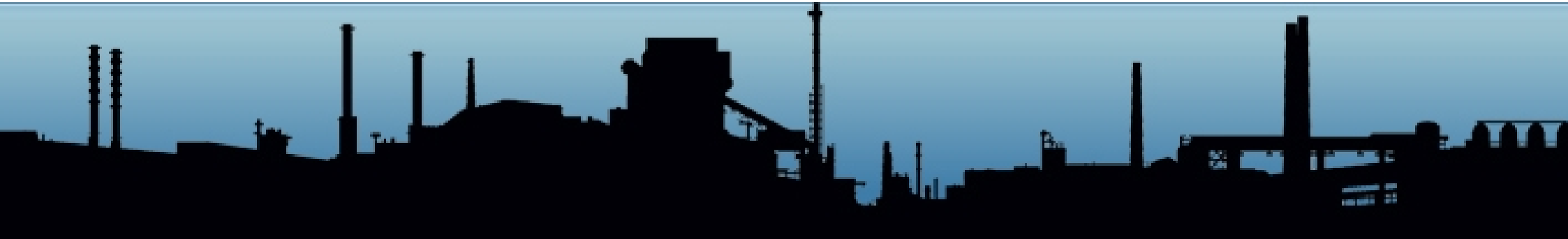
Eurotek
Refining Services Ltd

Our Business is Knowledge Transfer

Refining Blending

A Eurotek training course



ERS Refining Blending

An introduction:

The ERS Blending training course 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 operation, design and troubleshooting of all refining facilities.

Additionally, the course will be useful to any technical personnel wishing to gain a perspective of how blending fits into the operation of an integrated oil company.

Learning objectives:

Upon completion of the course you will:

• Have a better understanding of why product blending is necessary.

• Know it's importance in modern refining, and the impact on the economics of refining.

• Know the relevance of product quality specifications

• Be able to calculate the qualities of blended products.
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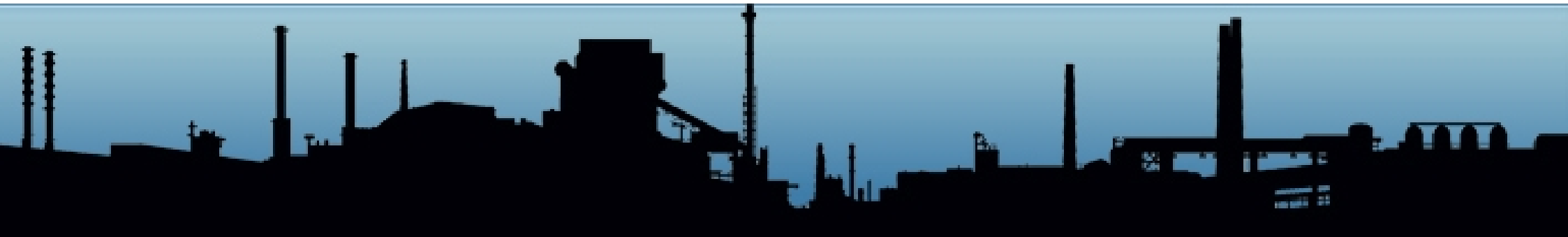
• Understand the valuation of blendstocks and their relevance in producing products in the most economical way.

• Be able to blend biofuels with conventional components and know the different ways of blending at the refinery.

• How to monitor quality performance monitoring and estimate the cost of quality giveaway.



Who should attend?

ERS 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.

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 product 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 ERS training courses.
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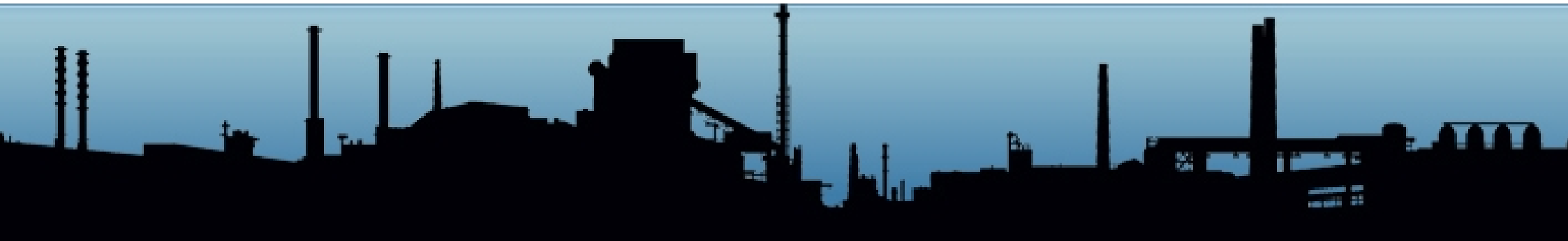


Course Presenter

Dennis Wood is a Director and Senior Consultant of DCW Refining Consultancy Limited. He has over 40 years experience in the oil refining and allied industries from research, refinery configuration studies using Linear Programming, refinery production planning, crude oils/cutting tool systems, and training. He has worked for various divisions of BP and UOP before setting up his own consultancy company carrying out both training and consultancy projects.

Within BP and UOP Dennis was involved in many refinery configuration and planning studies generally using LP models to optimise the refinery economics.

Dennis managed the Production Planning group at BP's Gothenburg refinery (now Preem) gaining hands-on experience. During the last 15 years he has been involved in training including running the BP Refinery Business course, the UOP Refinery Business Economics course, and lecturing on many other courses.

Consultancy work within both BP, UOP and his current company has included carrying out Refinery Improvement studies, Refinery Investment and Due Diligence studies in many different parts of the world specializing in production planning and product blending.

Dennis has a Ph.D in Organometallic Chemistry from Bristol University, and a B.Sc Hons. in Chemistry again from Bristol University, UK.

Course programme

Day 1

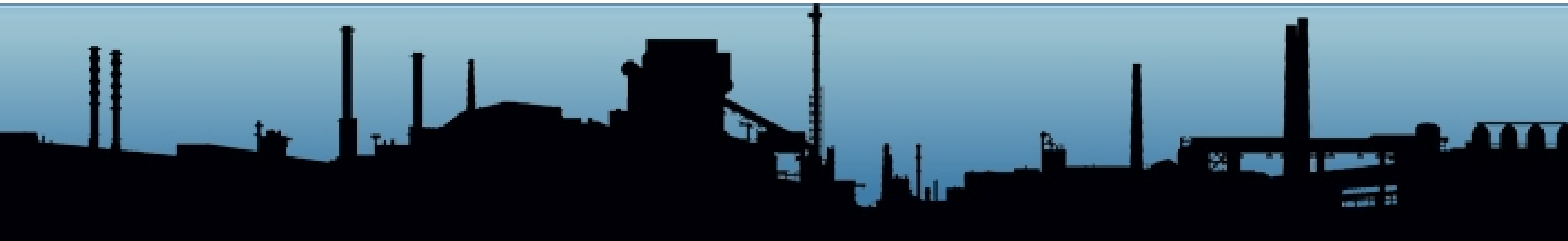
- Introduction to Product Blending
  - Why blending of products is necessary and important, and its impact on the economics of refining
  - Concept of linear and non-linear blending
- Fuel Oil Blending
  - European and Bunker Fuel Specifications
  - Concept of Blending Indices
  - Fuel Oil stability
- 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

Day 2

- Jet Blending
  - Jet Specifications
  - How CDU cutpoints change flash and freeze points
  - What's the role of the Joint Inspection Group
- Diesel Blending
  - European Specifications
  - 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?
- What happens if you get it wrong?
  - Fuel Oil, Jet/Avgas, Diesel

Day 3

Gasoline Blending
  - European Specifications
  - US gasoline RBOB– will this happen in Europe?
- Exercise 3: Gasoline Blending and Economics
  - Why is gasoline more difficult to blend today?
  - Calculate a blend to meet European spec gasoline when Ethanol is added at the depot
- What happens if you get it wrong?
  - Gasoline
- Blending Technology
  - Tank blending, in-line ratio control blending, inline property control
- Crude Oil Blending
- Performance Monitoring
  - The cost of quality giveaway



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