



THE CHEMICAL ENGINEERING MAJOR

Gasoline Blending in Refinery

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Gasoline Blending in Refinery

Introduction:

This five-day course is designed for blending engineers, senior operators, product coordinators, refinery planners, refinery lab personnel, and fuels marketers and traders, and provides a comprehensive overview and discussion of gasoline blending techniques, technology and cost/benefits. It addresses contemporary issues such as the latest specifications, ultra low sulfur fuels, impact of MTBE phase-out, Ethanol blending, and environmental impact of various gasoline specifications.

Case studies are used to illustrate the relative importance of each aspect of the gasoline blending operation, together with specific exercises. A complete set of course materials and lunches are included

Who Should Attend?

Refinery and unit operating personnel, Engineers with process responsibility, Refinery technical staff

Objectives and Benefits:

- Gasoline Product Specifications, Current and Future
- Components and Additives
- Blending Equipment and Software

- Blending Control and Optimization Techniques
- Blending Non-linear Property Correlation Equations
- Quality Assurance, On-line Analyzers and On-line Certification
- Environmental Issues
- Calculating Costs/Benefits of Blend Automation
- Blend Performance Monitoring and Troubleshooting
- References and Other Material

Course Outline:

- INTRODUCTION TO BLENDING
Types of Blending
 - Sequential; Tank to Tank; In-Line Blending
 - Linear vs. Non-Linear Blending
- SPECIFICATIONS, COMPONENTS, AND ADDITIVES
 - Typical Specs (US, EU, World) for Conventional, RFG, Diesel
 - Blendstock Components and Typical Properties
 - Additives (Octane & Cetane Boosters, Detergents, PP Depressants...) and DyeLinear/Non-Linear Property Blending
 - Component Interactions and Effects on Specs

- TYPICAL BLENDING EQUIPMENT AND SOFTWARE
 - In-Line Blenders
 - Dye and Additive Injection Systems
 - On-Line Analyzers (Conventional, NIR, NMR, Raman) for Octane, RVP, Dist, S, Cetane, CP, FP, CFPP, etc. & Typical Performance
- Remote Operated Equipment (MOV, Pumps, Mixers)
- Tank Gauging (Float, Servo, Radar) & Typical Performance
- DCS & Blending Software (Planning, Control, On-Line Optimization)
- HANDS-ON DEMOS OF BLENDING TOOLS (Using Your Computer)
 - Linear MON and Cetane Index Calculators
 - Linear & Non-Linear Blending Calculators
 - Blending LP Gasoline Optimizer
 - Comparing Linear/Non-Linear/Optimized Results

5) THE BLENDING OPERATION CYCLE

- Types of Optimizers
- Typical Property Correlation Equations for Octane, RVP, Dist, Cetane, CP/PP, CFPP, Visc, etc.
- Planning of Blends / Generating Blend Orders
- Executing a Blend / Quality Control
- Blend Documentation
- QUALITY ASSURANCE
- Laboratory Measurements
 - ASTM Methods for Gasoline and Diesel

- On-Line Analyzers
 - Advantages vs. Single Lab Analysis
 - Improving Measurements with ASTM 2885/3764 Test Methods
 - State-of-the-Art NIR & NMR Analyzers for Blend Control
- Criteria for In-Line Blend Certification
- CLEAN FUELS AND ENVIRONMENTAL ISSUES
- EPA Complex (Emissions) Models
- Impacts of Upcoming USA and EU Regulations
 - Phase Out of MTBE
 - Ethanol Blending
 - Sulfur Reduction with Tier 2
 - Bio-Diesels
- Sulfur Test Problems and Contamination

8) BENEFITS OF IN-LINE BLENDING

- Typical Benefits Study Content
- Benefits Calculation Methodology
 - Inventory Reduction
 - Quality Giveaway Minimization
 - Use of Least Expensive Components
 - Tank age Minimization

9) OPEN FORUM Q&A SESSION

- Summary of Each Participant Blending Operation
- Exchanging Problems / Handling of Common Blending Problem