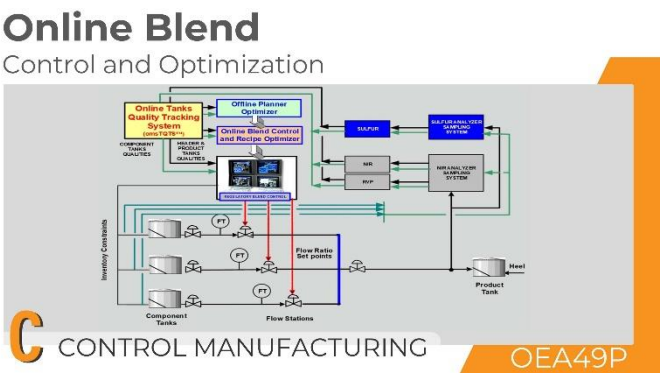

Topic ID	**OEA49T**
Title	**Online Blend Control and Optimization**
Category	**C-Control Manufacturing**
eLearning Level	**Basic**

Introduction

The tank storage system and pipeline framework of oil refineries are constructed to accommodate different crude blends. These designs and operations are necessary to achieve benefits regarding product quality and profit. Still, the integration of proper online blending systems and automation strategies is essential to sustain maximum overall advantages.

This topic will discuss typical two-tier blend control, limitations of a two-tier blend control, a typical current three-tier blend control, limitations of online blend control layers, advances in online blend control and optimization systems, advances in online tank quality tracking systems, feedforward, and feedback integration of blend control, etc.

Aspects of Online Blend Control and Optimization

- Assessment of the schematic representations of a conventional two-tier and three-tier blend control process
- The influence of changes in stock tank characteristics and the strategic location of multi-analyzer sampling points for achieving and maintaining the correct petroleum blend recipe
- Problems arising due to the limitations of two-tier blend control and the solutions introduced by the addition of a linear and nonlinear recipe optimizer
- Inconsistencies that may occur between online three-tier blend control models, optimization architecture, and the human planner even with identical feed data
- Use of an online tank quality tracking system (TQTS) in advanced system integration of blend planning, control, scheduling, and optimization
- Evaluation of the capabilities of TQTS to provide nonstop and near real-time tank quality analyses to refinery processing units using the program process interface and mathematical models
- Use of analytical measurements such RVP, NIR, and gas chromatographs for chemical composition to properly assess the stock quality and ability to run continuously
- Use of feedback and feedforward integration to widely enhance blend control by preventing disturbances that cause sub-optimal changes to the system.
- Reduction of costs in inventory, sub-optimal blend recipes, contamination errors, correction of blends and re-blending, and off-spec or quality giveaway by using the appropriate blend control strategies
- Valuation of the cost of a system installation upgrade and its rate of investment and turnaround time
- Importance of the implementation of systems supplied by the same vendor to avoid inconsistencies and incompatibilities

Summary

Online blend control and optimization are largely desirable and crucial to delivering high-component premium blends while achieving an operating profit point.

Options for eLearning This Topic

Mode of eLearning	Available?
Free Course	No
Refresher Course	Yes
Pick N Choose (Custom Curriculum)	Yes
Advanced Level Course	Yes
Structured MCOR Curriculum	Yes