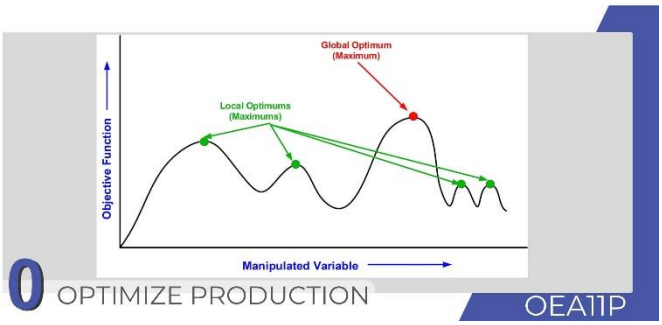
Blend Optimization



Topic ID	**OEA11T**
Title	**Blend Optimization**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

Product blending is the process of allocating components to a product and the application of mathematical programming to produce the required solution.

This topic discusses the technology and methodology of fuel blend optimization.

Modes of Blend Optimization

1. Single-Blend Offline Optimization

This is a process of finding the least costly component combination to keep the blend specs constant.

2. Single-Blending Online control and optimization

This is a real-time adjustment of specific component rates. It enables the blend specs to be constant at all times.

3. Multiple-Blend Optimization

This is the process where multiple blends are allocated multiple resources.

Processes of Achieving Blend Optimization

1. Control and Manipulation of Variables

This is achieved by adjusting and manipulating various variables in a blend equation.

2. Generating Sets of Blend Equations

This is done by placing the components into linear and nonlinear equations simultaneously.

3. Realistic Sets of Equations

This refers to a process of setting out both minimum and maximum specs by using equations.

4. Transforming Inequality to Equality

A slack variable is added to an equation with inequalities so that it can be solved. In this instance, the slack variable represents violation and giveaway. It helps to provide a feasible solution.

5. Final Sets of Equations

Minimum and maximum specs are solved as linear equations while introducing the slack variable to find a feasible solution.

6. Finding Optimum Solution

This is achieved by adding an objection term to the set of equations. The objective term has a driving force for the minimum deviation from the required specs of the blend quality, maximum profit, and minimum giveaway.

Methods of Solving Blend Equations for Optimization

Linear equations and nonlinear equations using nonlinear or linear optimization.

Summary

To ensure optimum profitability of a refinery, it should optimize its blend recipe. Depending upon the requirement of prediction accuracy and blend models, an optimization algorithm may be chosen.

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