Blending Modeling Process

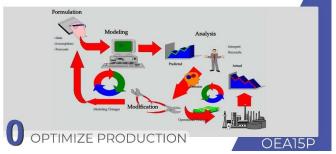|	
Topic ID	**OEA15T**
Title	**Blending Modeling Process**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

The blending modeling process consists of mixing feedstocks from various upstream processes and some additives to make several blends per the required properties. Therefore, accuracy plays a major role in blend modeling. Any inaccuracy may result in the overall reduction of profit because it may sacrifice the quality of the product.

This topic walks through a generic blend modeling process valid for all blend optimizers in the market.

Components of Blending Modelling Process

- Gasoline blending blends several component streams into different grades of gasoline. Each component has its own specific importance and role. Generally, eight to fifteen components are blended simultaneously.
- Blend planning aims at increasing the net profit and keeping the component inventory balanced. Furthermore, by minimizing quality giveaway, it also helps to manage component export/import.
- The offline optimizer controls the volume and net composition of blends. It is used for single-recipe generation of gasoline, diesel, and fuel oil items. Furthermore, a monthly production estimate for multi-period blending can be driven out. However, it cannot schedule starting time of blend, perform blend sequencing, or simulate a processing unit. The offline optimizer also cannot model any change in stock qualities. There is no engineering judgment involved.
- Stock availability identifies the amount of stock available to blends. This is what determines the market price.
- Stock allocation deals with assigning stocks and pools to blends. Since refineries produce multiple products, stock allocation evaluates the energy and emission impacts of fuel systems.

- The blend should be prepared at a low cost to enhance profit while still meeting the prescribed specifications.
- Backcasting helps in calculating the ratio of a predicted value to actual results. In addition, it helps determine by what amount the calculations meet the theoretical predictions.
- Re-blending meets specifications by blending an off-test tank to meet requirements.
- Blend Studies deal with theoretical analysis of a situation of interest. Therefore, this topic is important as it sets out the steps and procedures to create the desired output.
- Recipe linking is useful for large blends. It causes different blends to have a similar recipe. Thus, it acts as a bridge for several blends altogether.
- Pooling combines several streams to form one component in blending. Thus, pooling maintains the vitality of blending by forming a single constituent as a whole.
- Suboptimality occurs when a solution that isn't global optimum is converged to a solver.
- Heel track accounts for the quality and volume in blend tanks over a while. It is recommended to fill storage tanks with similar crudes for better profits so that the amount of value lost through mixing and degradation is reduced.

Summary

This topic describes the usage of a generic blend optimizer (and walks through all steps and required data to model a blending system).

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