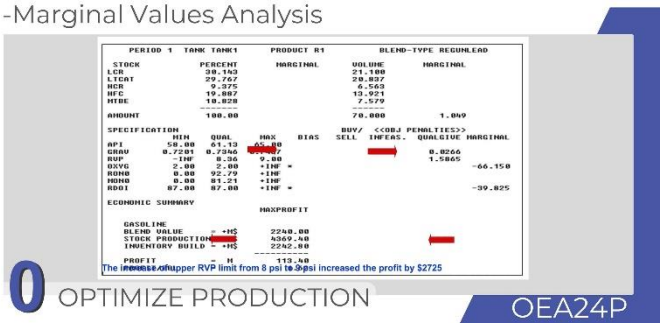
Discussion of Results

-Marginal Values Analysis



0 OPTIMIZE PRODUCTION

OEA24P

Topic ID	**OEA24T**
Title	**Discussion of Results-Marginal Values Analysis**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

Marginal values are valid for a specific range of variables. They change as soon as a modification is induced in either the independent variable or the dependent variable. Thus, the marginal effect is the instantaneous change brought by the slight variations in the variables.

It is non-zero if independent and dependent variables have values within a specific limit. The optimizer is developed to calculate marginal values. Then a profit calculation concerning a model is done. Marginal values are quite crucial in the refinery because they help prevent quality giveaways. Refiners can avoid infeasible problems with the help of marginal values.

This topic will discuss the concept of marginal values, cause and effect of marginal values, usage of marginal values to avoid infeasibility and giveaways, the breakeven point for the cost of components, etc.

Marginal Values for Linear Programming Issues

When there is a variation in economic value concerning a refinery unit (for example, feedstock procurement), it is called a marginal value. Here, information concerning large increments for nonlinear programming issues cannot be obtained.

On the other hand, in linear issues, marginal values show consistency for small increments. Therefore, they cannot be used for estimation when there is a large-scale substitution of feedstocks.

Key features of Marginal Values

Marginal values provide a refiner with the breakeven points for the cost of components along with variable production charges. This helps the refiner have an estimate of blend quality giveaway. Variables with marginal values in a refinery are component percentages, blend volume, total blend volume, predicted finish blend properties, and component inventories. Changes in any of the variables affect the others.

Any change in the recipe brings some changes in the profit values. That can be calculated by marginal values, predicting profit value increase or decrease by a unit change in the component percentage or volume.

Marginal values of total volumes of blend help to evaluate total profit and predict how much production is needed to reach the profit targets of the refinery. Similarly, the effects of RVP and RDOI values on refinery profit can also be estimated. Marginal values can either be positive or negative. A unit change in the objective marginal value can be predicted by a unit change in the variables associated with the objective marginal value.

Positive marginal values for a model mean that it needs more of the component for which the marginal value is indicated. In contrast, the negative marginal value suggests that the model needs less of that component. Zero marginal value for an element indicates that no change will occur in the model with minor changes in the component.

Summary

Marginal values are essential in predictions concerning blending recipes. But blend models are not entirely linear. The significant non-linearity in the model affects the calculations. Therefore, its forecasts can never be guaranteed, and extrapolated assumptions should be avoided.

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