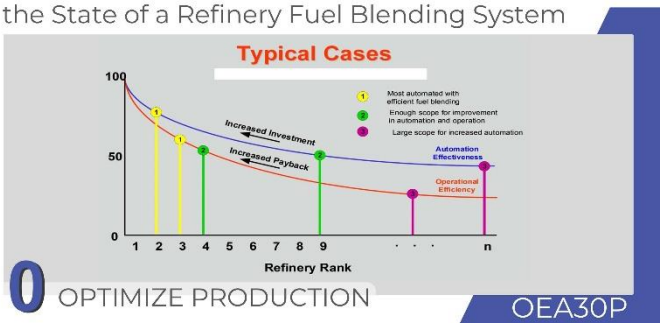
How to Benchmark
the State of a Refinery Fuel Blending System



Topic ID	**OEA30T**
Title	**How to Benchmark the State of a Refinery Fuel Blending System**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

Refiners use an automated fuel blending system when making fuel products to meet the strict specifications of the end products. Strict monitoring is required to keep the fuel blending system controlled and optimized. Therefore, it is crucial to benchmark the state of the fuel blending system. It also helps in comparison with other refineries.

This topic will explain fuel blending benchmarking methodology, the typical fuel blender, crude oil products, fuel blending economics, blending performance indices, etc.

Methodology to Benchmark the State of the Fuel Blending Systems

The methodology to benchmark the state of the fuel blending system uses two indices: automation effectiveness (AE) and operational efficiency (OE). These indices are also useful in estimating the required investment to upgrade the blending system from manual to automated or automated to advanced blend control.

Efficient and economical production can affect a refinery's bottom line by a 7-8% profit margin, e.g., minimizing gasoline fuel's octane and Reid vapor pressure giveaway by 33% leads to a savings of 2% of the retail price. Usually, refinery operators do one-time analysis to maximize profits without compromising the quality of products and do not perform comparative studies. However, the two important indices, AE and OE, can handle many concerns in addition to this traditional blend benefit analysis.

The AE index analyses the complete automation islands of blend infrastructure, including tank farms, tank gauging systems, laboratories, field equipment and instruments, additive and distributed control systems, etc. These islands of blend infrastructure are assigned weighted percentages from 1 (least) to 10 (most impacted) depending upon their importance. By enlisting the attributes of limits, i.e., 0 and 100 of the automation index, the above-stated automation islands are benchmarked to analyze all components and subcomponents at the deepest level. Thus, a refinery's state of blending infrastructure can be estimated in terms of the relative comparative index rather than the absolute comparative index.

OE index is scaled between 0 and 100 based on execution, resources, and methodology to benchmark blending operations.

Expertise in data analysis and optimization of blending recipes is required To estimate the OE index. After collecting historical blend data (3-12 months), an offline blending optimizer is used for three-part data analysis and re-optimizing historical blend recipes.

Summary

These two indices provide absolute benchmarking and comparative analysis of refineries by ranking them after obtaining the state of the blending system concerning each refinery. This methodology is cost and time-effective not only in benchmarking but in tracking blending key performance indicators. In addition, it is useful for estimating budgets and benefits of blending upgrade projects.

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