Quality Relationships, Analysis,
Measurements, and Control

0 OPTIMIZE PRODUCTION   OEA60P

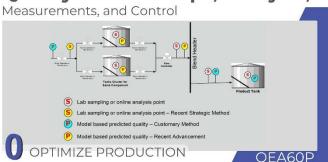| Topic ID	OEA60T
Title	**Quality Relationships, Analysis, Measurements, and Control**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

Points of sampling and online measurements in a blending system are important in adjusting the proper fuel oil/diesel/gasoline quality. For this purpose, in a refinery, samples are taken from specified locations and analyzed. This analysis can be done in a laboratory, but nowadays, online analyzers are used instead for accurate measurements and time-saving purposes.

This topic will discuss points of sampling and online measurement in a fuel blending system, matrices of blend specs versus required stock, final blend qualities for different products, challenges concerning analysis and online measurement of required qualities, points of measurement/analysis, tank-to-tank blending, rundown blending, quality analysis matrices, quality measurement/analysis challenges, etc.

Critical Aspects Concerning Sample Analysis

Critical aspects concerning sample analysis include safety, losses due to spillage, result accuracy, and analysis frequency.

One of the best approaches is the online measurement of the quality parameters. Recording data in a matrix form is also useful.

This facilitates quick observation and easy understanding. It allows a refiner to see all the data at once but is sorted into different categories.

Tank-to-Tank Analysis

Fuel sampling is done directly from the tank for the blending of different fuels. Online analysis of the fuel is carried out directly from the tanks using the latest methods. Tank-to-tank analysis of the fuels is done by lab sampling. Here, online installed meters are used. It is important to measure the quality of fuel at the inlet, inside the tank, and at the tank's outlet for blending processes.

Similarly, sampling the header in which fuels are mixed and measuring its quality also plays a significant role. A tank-to-tank system is implemented where storage tanks are available. Rundown blending is another important blending operation.

Rundown blending occurs when the storage tank is not available, so direct blending is done. During the rundown at the inlet, fuel oil is analyzed. At the header, quality is analyzed and measured. Different parameters need to be measured at different points.

Lab sampling is done in all cases: inlet, interior, and exit. However, in the case of stock tanks, there is no model-based prediction for tank inlets.

In the context of tank interior, model-based predictions are a recent advancement. Conventionally, model-based prediction is available for various locations of blend headers and product tanks.

Summary

Here, monitoring of sampling points for the blending of fuels is described in detail. Monitoring may be lab-based/online. Different blending processes and the analysis of parameters/location in various cases are also discussed. Sampling points are different in different cases. For example, olefin measurement is needed for RON. Stock aromatics are also measured. This helps to have a blend as per specifications.

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