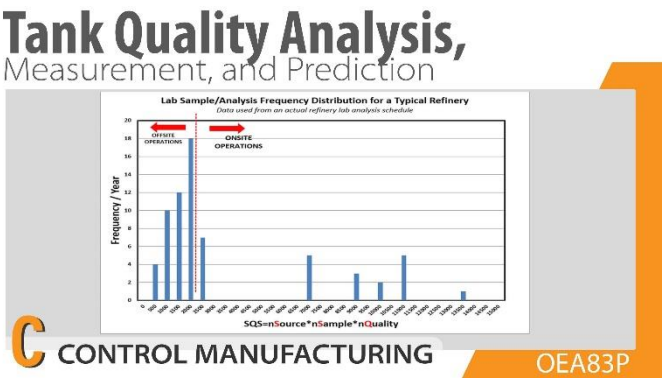

Topic ID	**OEA83T**
Title	**Tank Quality Analysis, Measurement, and Prediction**
Category	**C-Control Manufacturing**
eLearning Level	**Basic**

Introduction

There are two different methods concerning tank quality analysis. Method 1 consists of tank sample and lab analysis, online analyzer at stream inlet, and outlet and model-based predictive calculations. A typical refinery lab analysis determines frequency per year and load distribution. Here, cost is assessed, and reduced load is justified. Method 2 uses an online analyzer. There is a process unit analyzer that can predict the quality of the rundown stream. An online blend analyzer checks quality at the inlet and exit of the tank.

This topic will discuss methods to determine tank quality, method 1 tank sample and lab analysis, a method to determine sampling and lab analysis load, typical refinery lab analysis load distribution, economics of lab analysis, justification to reduce lab analysis load, method 2 - online process analyzers, process unit analyzers, online blending analyzers, method 3 - measuring tank inlet qualities, and using models to predict, etc.

Tank Quality Analysis

Tank quality analysis requires sampling and scheduling, as well as critical information concerning the tank. This information is used when blending products. It serves as input for feed quality. There may be a delay of 4 to 8 hrs. before results are available to the end user and other applications. Quality analysis may not be useful if a tank is active. Lab analysis cost depends on number of samples, number of sources, and number of quality analyzers per sample and per source. Average lab analysis cost may be about 15 to 20 USD.

A typical refinery load distribution graph presents information concerning number of sources, amount of sample, quality, and frequency of load per year. Economic analysis of tank quality consists of sample cost, analysis cost, and total sample. Reducing load justification is about reducing the number of samples per day. It will automatically reduce the total cost of sample and analysis. In method 2, the online process unit may be installed at the location of the tank exit or at inlet header. That indicates the quality at the inlet. An online analyzer may be discrete or integral. It may be multiplexed to give one or many qualities. Process unit analyzers provide info on the quality of the running steam. This information must be supplemented by lab analysis for complete results.

An online blend analyzer must be installed at the exit of the tank or header. It may be a discrete analyzer installed at the blend exit or an integral analyzer for stock tanks and header exit. The online blend analyzer only measures the quality of the running chemical product. It cannot measure the quality of the final product.

Summary

Model-based prediction requires information concerning tank quality, integrated sampling systems, multiple headers for diesel and kerosene rundown, inter-tank transfer tracking, integration of feedforward and backward system, prediction performance, etc. Current technology uses online predictive techniques, available for 7/24 for a refinery. It can be used for both open and for closed loop. It increases the usability of the analyzers by rearranging their sample location. The ROI takes less than a month.

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