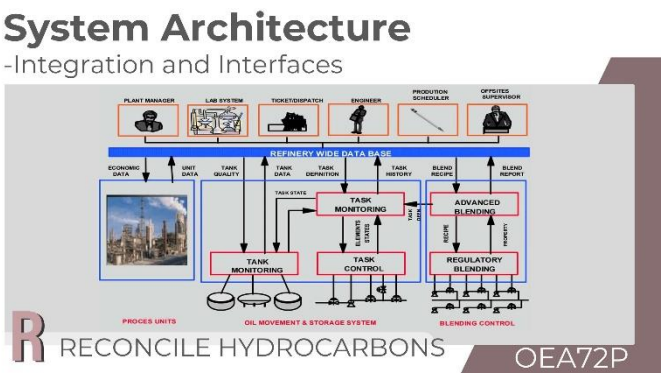

Topic ID	**OEA72T**
Title	**System Architecture-Integration and Interfaces**
Category	**R-Reconcile Hydrocarbon**
eLearning Level	**Basic**

Introduction

Refinery offsite automation helps to manage real-time blending as well as oil movements. The involved database holds all relevant data, the configuration of blending, and oil movement. The graphical interface is used for automatic scheduling and planning of blend and oil movement, laboratory test reports (LIMS) retrieval, etc.

This topic will discuss refinery offsite automation islands, fuel blending integration islands, client-server architecture, system architecture, the typical technology set, required interfaces, process and system interfaces, offline blend optimizer interfaces, tank qualities tracking system interfaces, online blend control interfaces, etc.

Offsite Automation

Offsite automation has a significant role in the improvement of management and operation of a refinery. There is a very short payback period. Optimizing and controlling product quality and decreasing product storage will result in a reduction of capital costs.

DCS Operations

In a refinery, the distributed control system (DCS) has a distributed layout with nodes. It acts as a bridge between the field and the supervisor station. DCS uses distributed intelligence. Here, a front-end controller behaves like a microprocessor-based system. Real-time data obtained from the field by each DCS is stored in an open history server. C#.NET is used as a programming platform for developing an internet-based control system.

The blend control system could perform blend planning. It can blend management with an offline optimizer and online real-time blending optimization.

It also confirms feedback from analyzers. It can monitor the properties of the final product. The advanced blend control system signals the regulatory blend control (RBC) unit for calculation of optimum product recipe at every interval with the help of online analyzer feedback, laboratory reports, samples, and equipment constraints.

The role of the RBC is to manage and control the blend operation, including the component ratio and flow rate of the blend. It also monitors blend destination, equipment, & sequence for safe/correct operation.

The quality control interface is used to configure the ratio for target quality with the help of online analyzers. With the help of blend order management, schedulers, and blend planners, operators can optimize blend orders by using a web-based interface. This interface is integrated into the blend planning system with the help of XML language.

Summary

Refinery offsite operations cover crude storage and receipt, crude blending, process unit feeds and rundown, tank-to-tank transfers, and final product storage. Planning, scheduling, and optimization with the help of real-time information

Feedback is the main factor in refinery profitability. Tank quality integration systems provide access to tanks volumes, levels, and quality information.

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