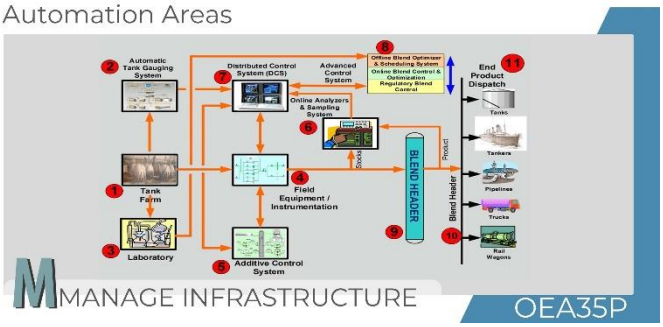
Identification of Automation Areas



Topic ID	**OEA35T**
Title	**Identification of Automation Areas**
Category	**M-Manage Infrastructure**
eLearning Level	**Basic**

Introduction

Most refineries have either already shifted to or are in the process of shifting their manual equipment into automated systems, thereby providing a computer-controlled environment, which is not only efficient but also highly precise. For example, the valves for tanks containing hydrocarbon streams and additives, switches for pumping stations, and mixing tanks can all be automated so that they are controlled by an intelligent computer software program.

This topic will discuss blending operations survey areas, survey objectives, field equipment automation, sampling and analysis systems, control and optimization software, computer systems, etc.

Blending Operations Survey Areas

The areas in the blending stage of the petroleum refinery that need to be surveyed are the storage tanks for different hydrocarbon streams, pumping area for the streams, mixing tanks, blend analyzers, and final product storage tanks.

Survey Objectives

The purpose of conducting the survey is to identify areas for the automation of various equipment used in the blending process for petrochemicals. The physical and chemical characteristics of hydrocarbon ingredients are nonlinear, making it cumbersome to estimate the properties of the final products. Therefore, accurate and precise measurement of inputs is compulsory to achieve the most optimal recipe for a desired product.

Field Equipment Automation

A software program decides the amount of a certain hydrocarbon stream be pumped into the mixing tanks by opening the valve of its tank, switching on the pumps, and the agitator for efficient mixing tanks for a pre-set duration for the blending process. This step is carried out for all the required hydrocarbon ingredients and additives to obtain the desired grade of petroleum products and maximum operating profit. Finally, the finished products are pumped into storage tanks, kept in certain environmental conditions until they leave the refinery.

Sampling and Analysis System

Online blending analyzers work in close coordination with the optimization software. They are incorporated into the blending systems for proactive analysis and comparison of the properties of newly blended products to those of the desired products. For example, suppose a variance is found between the two items. In that case, the analyzers send their readings to the software, giving explicit instructions to the actuators installed along with the blending equipment.

Summary

It is important to identify and survey all automation modules of a blending control system. This requires expertise and experience in comparing with the best practices in the industry and benchmarking the installation at a specific refinery's blending control system.

Options for eLearning This Topic

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