



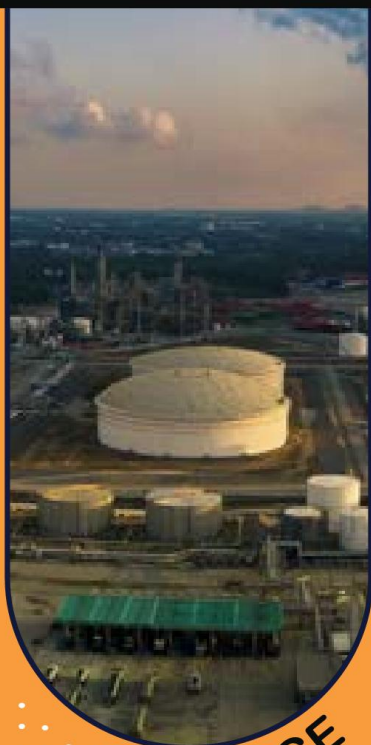
OMS eLearning Academy
For Refinery Offsite Operations Professionals

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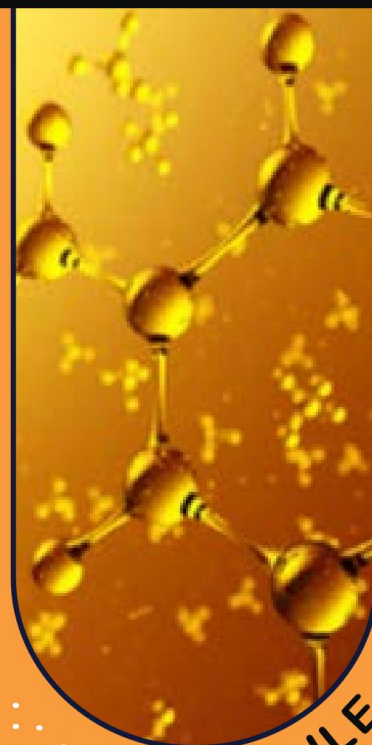
MANAGE



CONTROL



OPTIMIZE



RECONCILE

COURSE CATALOUGE





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Topic ID OEA426T
Title
Category MCOR
eLearning Level Basic

This free course consists of four topics related to each aspect of the MCOR strategy for refinery offsite operations.

- OEA401T- Management of the Infrastructure
- OEA402T-Control of the manufacturing
- OEA403T-Optimization of the production
- OEA404T-Reconciliation of the hydrocarbon

The brief content of each topic in this course is explained in the following paragraphs.

1. Management of the Infrastructure

This topic discusses Strategic Management and Automation of Refinery Offsite Operations, Tank Farm Management, and The Management and Automation of OM&S in a Refinery.

Onsite operations involve the complete refining process. This operational area means that after receiving crude oil, the onsite operation happens. Then the final products are ready for delivery. Offsite operations involve receiving the crude oil and its blending and storage at terminals. Chemical storage is an essential component of a refinery.

2. Control of the manufacturing

This topic will discuss challenges and factors affecting successful blends, blending modes, mathematics of blending, system modules, blending control and optimization, fuel blending benchmarking methodology, crude oil products, fuel blending economics, and performance indices.

This topic will also discuss methods to estimate product qualities, load, and cost of lab analysis, the economics of online tank pseudo-analyzers, plant tank farms, current modes, quality analysis methods, methods to analyze/estimate tank qualities, etc.

3. Optimization of the production

This topic will discuss mathematical programming and its attributes, crude oil planning and scheduling, fuel blending optimization, and Modes of blend optimization, including single-blend offline, single-blind online, and multi-blend. The optimization process consists of six steps that involve using sets of equations to find a solution.

This topic will also discuss identifying sources of errors in blending operations, analyzer dynamics, online analysis versus lab analysis, causes and remedies of online analysis errors, last good value and bias, flow correction methods, tank prediction bias, and final product prediction vs. lab analysis.

4. Reconciliation of the hydrocarbon

This topic will discuss refinery fenceline balancing, meter reconciliation, distribution of refinery loss, inter-tank transfer, mass quantity uncertainty matrix, HM landscape dataflow, etc.

Hydrocarbon management in the refining industry deals with identifying and quantifying losses, including accountable and unaccountable losses, and the measurement to control losses based on strategic and economic considerations.

Summary

This free bundled course presents an overview of the MCOR strategy for profitable and efficient refining operations.

Options for eLearning this topic

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



Course ID OEA401C
Title MCOR Preview-M-Manage Infrastructure
Category Free Courses
eLearning Level Basic

This free course summarizes the first module of the refresher course, which consists of three topics focusing on managing the infrastructure of a refinery. These topics are:

1. **OEA71T-Strategic Management and Automation of Refinery Offsite Operations**
2. **OEA76T-Tank Farm Management**
3. **OEA82T-The Management and Automation of OM&S in a Refinery**

Brief instruction of each of the above topics included in this course is discussed below. A more detailed discussion can be found in the details sheet of each topic identified by the Topic ID (OEAnnT) before the title in our curriculum's "Choose N Enroll" category.

1. **OEA71T-Strategic Management and Automation of Refinery Offsite Operations**

This topic will discuss onsite vs. offsite operations, offsite operational activities, problems and challenges, offsite and onsite operations integration, cost, benefits of offsite automation, etc.

Onsite operations involve the complete refining process. This means that after receiving crude oil, the onsite operation happens. Then the final products are ready for delivery. Offsite operations involve receiving the crude oil and its blending and storage at terminals.

2. **OEA76T-Tank Farm Management**

This topic will discuss the need for storage, storage stages, products and tank types, management of a single tank vs. a tank farm, steps to determine tank inventory, distribution, measurement of tank quality, fugitive emissions from storage tanks, etc.

Chemical storage is an important component of a refinery. It consists of both crude oil storage and the

Finished product storage Different refinery products require a different types of storage tanks.

In single-tank management, a refiner must know about the inventory, quality, and fugitive emissions. Fugitive emissions are important because they affect the inventory during the oil movement. Fugitive losses may be segmented as standing losses, working losses, and total losses.

3. **OEA82T- The Management and Automation of OM&S in a Refinery**

This topic will discuss the extent of OM&S activities in a refinery, the status of OM&S automation, typical OM&S activities, problem areas of in-plant oil movement, computer automation of OM&S, etc.

Crude oil is transported from oil fields to refineries and then to storage areas by various methods. Once the refining process is completed, the oil is transported to storage tanks. Typical OM&S activities include receipts of feed; rundown (off-the unit), batch, parallel and serial blending; shipments and custody transfers; unit rundowns; and water drainage.

Summary

This free course summarizes the first module of MCOR strategy for refinery operations. There are three other free courses to control, optimize, and reconcile. You may want to enroll in the first module of the refresher course to learn these three topics in detail.

Options for eLearning this topic

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



Course ID OEA402C
Title Preview of Academy MCOR Curriculum
Category Free Courses
eLearning Basic
Level

This free course summarizes the second module of the refresh course module, which consists of three topics focusing on how to Control the manufacturing in a crude oil refinery. These topics are:

1. OEA70T-Strategic Fuel Blending Management and Technology
2. OEA30T-How to Benchmark the State of a Refinery's Fuel Blending System
3. OEA42TModel-Based Predictions of Tank Qualities

Brief instruction of each of the above topics included in this course is discussed below. A more detailed discussion can be found in the details sheet of each topic identified by the Topic ID (OEAnnT) before the title in our curriculum's "Choose N Enroll" category.

1. OEA70T-Strategic Fuel Blending Management and Technology

This topic will discuss challenges and factors affecting successful blends, blending modes, mathematics of blending, blending system modules, blending control and optimization, etc.

Optimization assembles models to describe operations and their constraints. Optimized models are data-driven. Since gasoline provides about 60-70 percent of a refinery's income, gasoline blending is vital in refinery operations. Hence, an appropriate blending method is important for obtaining gasoline correctly and ensuring that property requirements are met.

2. OEA30T-How to Benchmark the State of a Refinery's Fuel Blending System

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

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.

3. OEA42TModel-Based Predictions of Tank Qualities

This topic will discuss methods to estimate product qualities, load and cost of lab analysis, the economics of online tank pseudo-analyzers, plant tank farms, current modes, quality analysis methods, methods to analyze/estimate tank qualities, etc.

Refineries manage a huge stock of crude oil and product inventories. That makes them a high-capital investment. Therefore, proper and accurate inventory must be maintained to improve operations' overall efficiency and ensure adequate reconciliation of hydrocarbons within a refinery.

Summary

This free course is the summary of the second module of MCOR strategy for refinery operations. In addition, there are three other modules to manage, optimize, and reconcile.

Options for eLearning this topic

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



Course ID	OEA403C
Title	MCOR Preview-O-Optimize Production
Category	Free Courses
eLearning Level	Basic

This free course summarizes the refresher's third module, which consists of three topics focusing on optimizing fuels production in a refinery. These topics are:

1. **OEA6T-Applications of Mathematical Programming in the Refining Industry**
2. **OEA11T-Blend Optimization**
3. **OEA32T- How to Identify and Reconcile Fuels Blending Errors**

Brief instruction of each of the above topics included in this course is discussed below. A more detailed discussion can be found in the details sheet of each topic identified by the topic id (OEAnnT) before the title in our curriculum's "Choose N Enroll" category.

1. **OEA6T-Applications of Mathematical Programming in the Refining Industry**

This topic will discuss mathematical programming and its attributes, crude oil planning and scheduling, fuel blending optimization, etc.

There is a linear function of production cost for finished petroleum products. The function can be optimized with the help of a mathematical model.

This model can also help optimize the cost of transportation. Refiners always look for more sales realization resulting in enhanced profitability. Hence, they need to use the blended stream efficiently.

2. **OEA11T-Blend Optimization**

This topic discusses the technology and methodology of blend optimization.

Modes of blend optimization include single-blend offline, single-blind online, and multi-blend. The optimization process consists of six steps that involve using sets of equations to find a solution.

To ensure optimum profitability of a refinery, it should optimize its blend recipe. Depending upon the requirement of prediction accuracy and blend models, an optimization algorithm may be chosen.

3. **OEA32T-How to Identify and Reconcile Fuels Blending Errors**

This topic will discuss identifying sources of errors in blending operations, analyzer dynamics, online analysis versus lab analysis, causes and remedy of online analysis errors, last good value and bias, flow correction methods, tank prediction bias, and final product prediction vs. lab analysis.

In refineries, sources of possible errors during blend operations may include flow measurement errors, transport and dead time lag in the analyzer measurement, lag in dynamic analysis (it measures the dynamic response).

Additionally, human error factors during a lab analysis, measure of qualities by online analyzers for component streams and blend header, and inaccuracies in blending methods. Biased correction is done for these blend errors based on blend product and recipe.

Summary

This free course is a summary of the third module of MCOR strategy for refinery operations. In addition, there are three other modules to manage, control, and reconcile.

Options for eLearning this topic

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



Course ID OEA404C
Title MCOR Preview-R-Reconcile Hydrocarbons
Category Free Courses
eLearning Level Basic

This free course summarizes the fourth module of the refresher course, which consists of three topics focusing on Reconcile refinery hydrocarbons. These topics are:

1. **OEA34T-Hydrocarbon Management in the Refining Industry**
2. **OEA17T-Collaboration of Data and Processes for Refinery Offsite Operations**
3. **OEA21T-Data Reconciliation and Feedback**

Brief instruction of each of the above topics included in this course is discussed below. A more detailed discussion can be found in the details sheet of each of the topics identified by the topicID (OEAnnT) before the title in our curriculum's "Choose N Enroll" category.

1. **OEA34T-Hydrocarbon Management in the Refining Industry**

This topic will discuss refinery fenceline balancing, meter reconciliation, distribution of refinery loss, inter-tank transfer, mass quantity uncertainty matrix, HM landscape dataflow, etc.

Hydrocarbon management in the refining industry deals with identifying and quantifying losses, including accountable and unaccountable loss, and the measurement to control losses based on strategic and economic consideration.

It is also known as mass reconciliation, mass balance, and yield accounting. Mass reconciliation is conducted at month-end by refinery yield accountants and financial analysts to calculate the refinery's final percentage of loss and gain.

2. **OEA17T-Collaboration of Data and Processes for Refinery Offsite Operations**

This topic discusses how processes and data complement and supplement each other.

Refinery processes are controlled by a comprehensive understanding of the usages of static, real-time, historical data types and their working in tank management, oil movement, blending, and hydrocarbon management.

3. **OEA21T-Data Reconciliation and Feedback**

This topic will discuss identifying sources of errors in blending operations, analyzer dynamics, online analysis versus lab analysis, causes and remedy of online analysis errors, last good value and bias, flow correction methods, tank prediction bias, and final product prediction vs. lab analysis.

In refineries, sources of possible errors during blend operations may include flow measurement errors, lag in dynamic analysis (the dynamic response measures), and human error factors during lab analysis.

Blend models are customized by the biased correction to avoid compromised blend quality due to errors in blending operations.

Summary

This course is the summary of the fourth module of MCOR strategy for refinery operations. In addition, there are three other modules to manage, control and optimize.

Options for eLearning This Topic

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

Empowering Refinery Industry
Professionals with Knowledge



Improving the Bottom-Line
with our MCOR Strategy



Helping Build Strategies
to Optimize Efficiency



Educating to Optimize
Refinery Assets



Helping to Capture
Lost Tangible Benefits







Providing a Portal
For Continuing Education

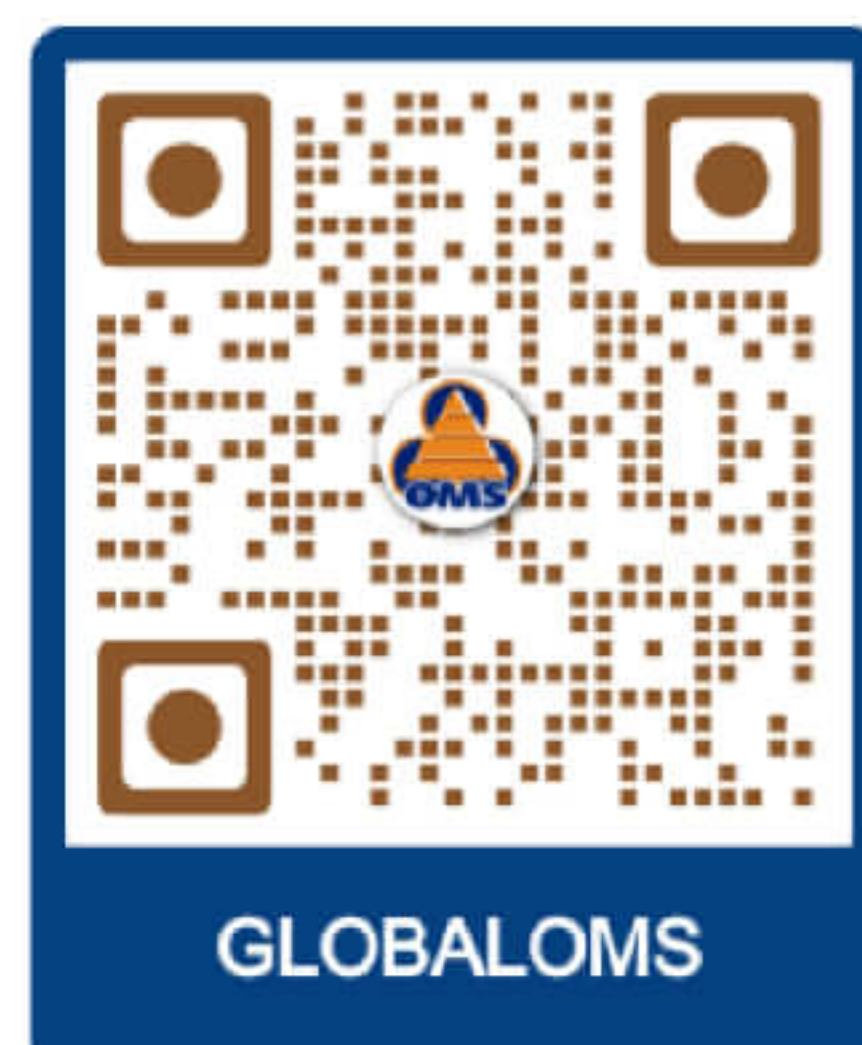




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