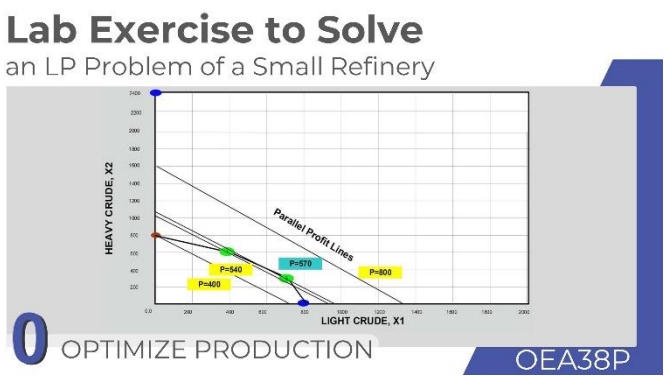

Topic ID	**OEA38T**
Title	**Lab Exercise to Solve an LP Problem of a Small Refinery**
Category	**O-Optimize Production**
eLearning Level	**Basic**

Introduction

Soluble chemicals, called additives, are mixed in Gasoline to improve gasoline performance characteristics. The gasoline characteristic which is not inherited by Gasoline can be achieved by additives. Additives are petroleum-based raw materials.

They have very specialized chemistry/function. The concentration of additives is in the ppm (parts-per-million) range. One ppm is equivalent to one mg per kg. Octane ratings of Gasoline are not enhanced by the additives. They serve only as lubricants. The additives facilitate improving efficiency.

This topic will discuss the types and properties attributed by various additives to gasoline blends.

Classifications of Additives

There are various classes of additives. For example:

- **Drag reducers** - Pumping cost decreased
- **Oxidation Inhibitors** - Gums formation is prevented. Here, oxygen is not allowed to react with Gasoline. Antioxidant hinders Phenols. These amines are aromatic.
- **Markers** - Gasoline moves through supply chain. It helps to track gasoline movement. It is added in Gasoline.
- **Corrosion Inhibitors** - Due to presence of water there is corrosion in pipeline and tanks. Corrosion Inhibitors prevent corrosion. They consist of carboxylates and carboxylic acids.

A hydrophobic film is formed on metal surface. It acts as an obstruction. Fuel is separated from metal. Affinities towards metal surface, molecular structure and chemical composition are the key factors influencing Corrosion Inhibitors efficiency. Fuel specifications are met by operators because of them. There are silver, copper and steel Corrosion Inhibitors.

They help in cost effective corrosion control. Examples of Corrosion Inhibitors are Pipeline Corrosion Inhibitor and Aviation Fuel Corrosion inhibitor.

- **Dyes** - They can differentiate various grades of a product. Most common fuel dyes are Solvent Blue 35, Solvent Red 24, Solvent Yellow 124, Solvent Red 26 etc.
- **Metal deactivators** - Catalyzation of gasoline oxidation by active metal ions are prohibited by them. They are chelating agents.
- **Deposit control additives** - They ensures smooth functioning of fuel injection system as well as carburetor.
- **Antiknock compounds** - At present, they are not used. They consist of MMT/TEL.
- **Demulsifier** - In context of centrifugal pump, there is strong sheaf field. Then there is emulsion of gasoline water. This emulsion is prevented by demulsifier. They are obtained from polyglycol.
- Drag reducers, markers and dyes are Anti-icing additives.

Summary

Fuel derivatives are meant for specific objective and high performance. They are specialized chemicals. They are added in fuels in ppm quality.

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

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