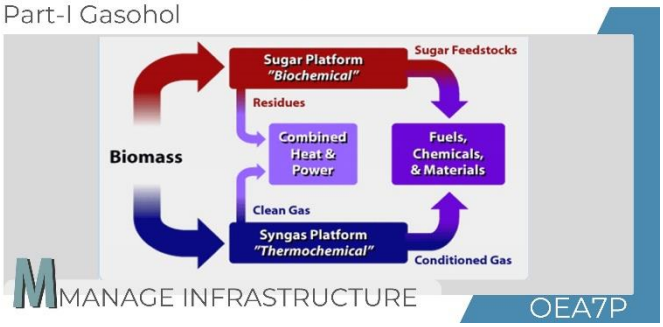
Biofuels-A Perspective

Part-I Gasohol



Topic ID	**OEA7T**
Title	**Biofuels-A Perspective Part-i Gasohol**
Category	**M-Manage Infrastructure**
eLearning Level	**Basic**

Introduction

Biofuels are derived from waste or organic matter, such as agricultural crops. They are a reliable source of renewable energy. They are blended with other fuels like diesel and gasoline.

They reduce the emission of carbon dioxide. As a result, there has been significant growth in biofuel production during the last several years.

At present, globally, biofuels make up three percent of road transport fuel. Due to recent technological developments, it is possible to have second-generation/advanced biofuels. This has improved sustainability. Biofuels are considered a substitute for conventional fuels.

This topic will discuss gasohol properties as well as feedstock. In addition, there will be a discussion about gasoline blends concerning ethanol, methanol, and biobutanol.

Classification of biofuels: There are two classes of biofuels - biodiesel and ethanol.

Ethanol: Fermentation of starch or sugar yields ethanol. It can come from wheat, maize, or sugarcane. Ethanol is usually blended with petrol to create a fuel that is ten percent ethanol or more. Flex-fuel vehicles may have both - ethanol or petrol.

Globally, Shell prepares the most sugarcane ethanol. Raizen (a joint venture of Shell and Cosan) provides two billion liters (commercial volume) of ethanol every year. In the context of biofuels, globally, Shell is the largest distributor-cum-blender. Biofuels procured by Shell follow international sustainability standards. For example, Shell follows Bonsucro's standards for sugarcane and the Roundtable on Sustainable Biomaterials on palm oil and soy.

Methanol (CH_3OH): Relatively cheap compared to ethanol. Methanol's energy density is lower, but it is more toxic. Methanol is blended with petrol and ethanol and may be derived from biomass and natural gas. It can also be synthesized by combining hydrogen and CO2. Racing cars are the main consumers of methanol fuel. It has a lower burning temperature than gasoline, so it is less volatile. Hence, during cold weather, it is difficult to start a motor engine. As octane rating is better, there is an improved power output and thermal efficiency compared to gasoline. Methanol is hygroscopic and consists of soluble/insoluble contaminants. Therefore, it can easily tolerate exhaust gas recirculation (EGR). In China, it serves as cooking fuel.

Biobutanol: Considered a superior fuel. It is derived from corn starch and molasses. Here, acetone is derived from the fermentation of microbes. Energy density is similar to unleaded gasoline. BP and DuPont are attempting to commercialize it. There are many biobutanol plants in different countries.

Summary

In the context of biofuels, the main challenge is to have better processing technology. Fermentation by microbes is getting the attention of researchers. Biofuels technology is very promising. Many companies are attempting to scale up this technology. There are many startups in this area now.

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