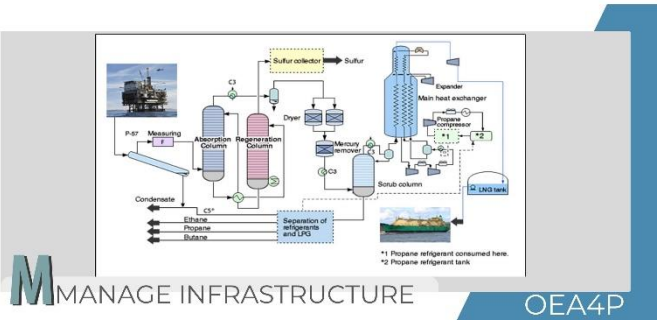
OMS eLearning Academy
For Refinery Offsite Operations Professionals

All About Gaseous Fuels



Topic ID	**OEA4T**
Title	**All About Gaseous Fuels**
Category	**M-Manage Infrastructure**
eLearning Level	**Basic**

Introduction

Gaseous fuels are the foundation of potential heat energy. They are gaseous state hydrocarbons consisting of carbon monoxide and hydrogen. Pipes are used for the dissemination of gaseous fuels to transport to their place of consumption. The fuels are divided into various classes like liquefied petroleum gas (LPG), natural gas (methane, CH4), gas to liquid (GTL), liquefied natural gas (LNG), and compressed natural gas (CNG).

This topic will discuss the economics, state and chemistry, modes of transportation, production sources, global consumption /production, and utilization of gaseous fuels.

Types of Gaseous Fuels As per Their Origin

Natural Gas: Natural gas is explored in coal/oil fields. It contains mostly methane with traces of other hydrocarbons. It is a non-poisonous and colorless gas, which makes it a popular domestic fuel. Its calorific value range between 12000 to 14000 Kcal/m3.

Synthetic Gases: These gases are generated during various chemical processes. Biomass and waste are also used to generate gaseous fuels. Synthetic gases are used in the power sector.

Significant constituents of natural gas are carbon monoxide (CO), carbon dioxide (CO_2), methane (CH_4), ethane (C_2H_6), hydrogen (H_2), hydrogen sulfide (H_2S), oxygen (O_2), and nitrogen (N_2).

Shale Gas

Shale formations consist of trapped shale gas. Hydraulic fracturing and horizontal drilling are used to extract shale gas. The volume of extracted gas is huge. Shale gas production gave the natural gas industry a new life.

Hydraulic Fracturing for Extraction of Natural Gas

In shale formations, there are hydrocarbons trapped within the shale's cracks/fractures. Hydraulic fracturing opens these cracks, liberating the trapped hydrocarbon.

Coke Oven Gas

During the metallurgical coke manufacturing process, bituminous coal is heated, which produces coke oven gas. Here, the calorific value is medium. The main components of this gas are hydrogen, methane, hydrocarbons, carbon monoxide, carbon dioxide, and nitrogen. Coke oven gas is generated by a battery that consists of many ovens/vertical chambers. The crushed coal is sent to each oven.

Bio-Gas Digester

This is a system for waste processing. First, it generates biogas that is converted into energy. Then, in a digestion chamber, organic matter is decomposed.

Summary

Gaseous fuel is generated from various natural, synthetically, or reprocessing waste materials. The fuels so generated are supplied through a distribution network to a large consumer base. Power generation is the main utility of all gaseous fuels.

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