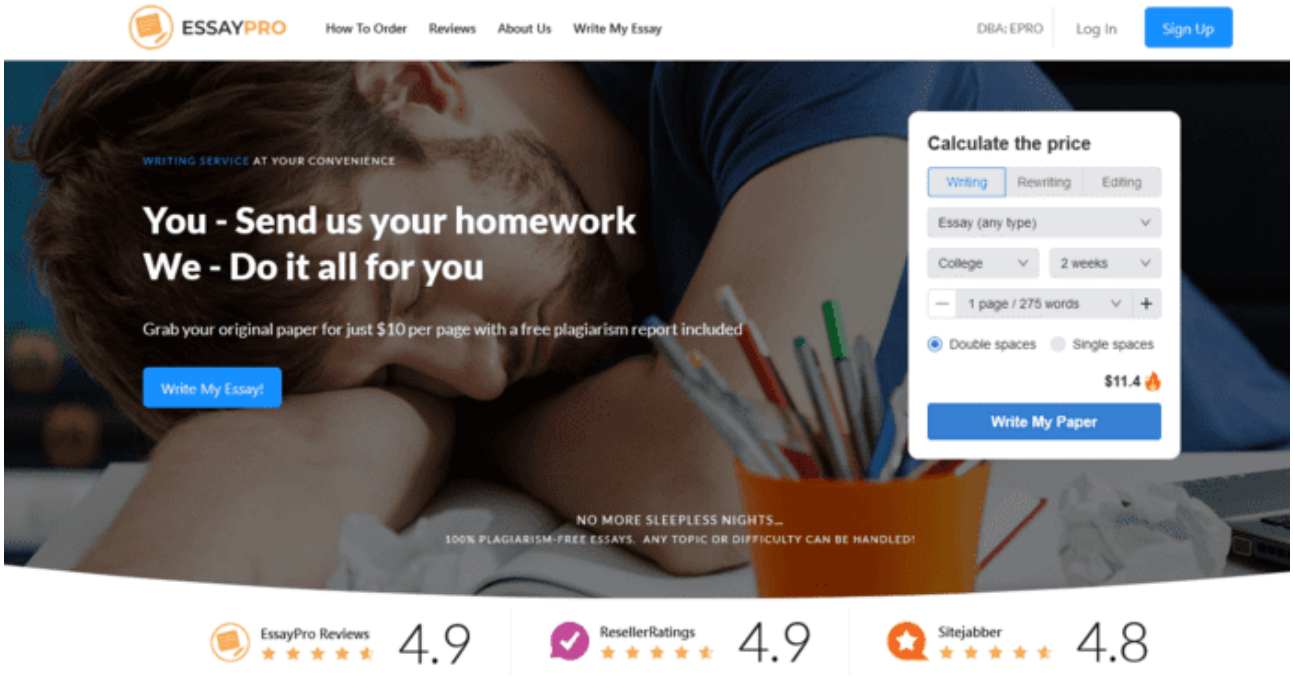
Water Gas Shift Reaction (Syngas)



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Purpose:

Syngas through water gas-shift reactions relate multiple reasoning to the foundation and production of several oil and gas related industries. The following analysis of syngas will begin with the explanation of water gas-shift reaction along with related Steam Reform Reactor, and Fischer-Tropsch processes. In the major bulk of the analysis, the complete process of syngas involvement with water gas-shift reactions will be discussed. In addition, catalyst involvement will be introduced in processing techniques. In reference to processing, the explanation will delve into effects from high and low temperature shift catalyst and their compositions. In respect to industrial settings, major examples of the process will also be discussed, which includes production of syngas through multiple uses. A brief explanation in terms of economics, alternate uses, and ecological effects will also be discussed through reverence of syngas through water gas-shift reactions.

Introduction:

Water gas shift reaction was first exposed and practiced by Italian entrepreneur and physicist Fenice Fontana in 1780. Through his extension of understood chemical and physical properties of gases, he utilized the WGSR to produce cost efficient hydrogen production. The reactants contained syngas or water gas, carbon monoxide and hydrogen mixture. WGSR was expanded in 1873 by Thaddeus S.C. Lowe, where he used water gas-

shift reaction with high pressured steam and coke gas to produce an excessive amount of hydrogen gas. Today, water gas shift reactions have been intertwined with syngas to produce the same products, though, at an increased demand with increases in production from catalyst involvement.
Process:
Pure hydrogen demand is constantly increasing d...

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