ABSTRACT

Product flexibility, low capital investment and energy efficiency of larger capacity plants will shape the future of the olefins industry. As propylene demand is forecast to grow faster than ethylene, on-purpose processes such as metathesis of ethylene and butenes are becoming more significant in the supply of propylene.

In view of potential benefits of producing propylene via metathesis of ethylene and butenes, this review evaluates a SRIC design for on-purpose propylene production based on Olefins Conversion Technology (OCT) licensed by Lummus Technology, a CB&I company.

Our cost analysis is based upon a plant capable of producing 350,000 metric tons per year of polymer-grade propylene. The estimated total fixed capital investment for such a plant is to be $141.0 million at a U.S. Gulf Coast location. The estimated net production cost for polymer-grade propylene is 41.89¢/lb with the ethylene feedstock charged at 43.2¢/lb and Raffinate II feedstock at 29.3¢/lb. Adding 25% per year pretax ROI to the net production cost gives a product value of 46.46¢/lb. These costs indicate that producing propylene via metathesis of ethylene and butenes is economically attractive.
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