KBR K-COT™ Catalytic Cracking Technology

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Abstract
The ever-increasing demand for ethylene and propylene monomer in the petrochemical market, coupled with the decreasing demand of refinery products has urged the petrochemical producers to look for a competitive, alternative technology to produce ethylene and propylene from low-value hydrocarbon stream. This technology will also balance the demand upset caused by the use of shale gas as feed for olefins production.

KBR K-COT™ is one such technology, which is based on fluid catalytic cracking (FCC) of low-value olefinic, paraffinic, and mixed stream of hydrocarbon to produce high-value ethylene, propylene, and aromatic-rich gasoline. This review examines the technology and economics of K-COT™, which is being licensed by KBR under the olefin’s technology portfolio.

K-COT™ is an alternative technology to steam(thermal) cracking for the production of light olefins, which can be used in a standalone way or in combination with traditional steam cracker. Olefins plant based on K-COT™ technology uses KBR Orthoflow™ FCC converter and a proprietary catalyst which provides high yields of ethylene and propylene compared to traditional FCC reactors. Effluent from the converter is treated and separated in recovery section with features like front-end depropanizer, front-end acetylene reactor, low-pressure column operation, heat pump system, and advanced fractionation technique, which help to reduce equipment count and specific energy consumption.

This review evaluates the KBR K-COT™ technology for production of 800 KTA (1,762 million lb/yr) of polymer grade ethylene. The evaluation of technology starts with briefly reviewing the technical insights of K-COT™ technology and thereafter, a more detailed analysis on process flow scheme, process description, heat and material balance, utility consumption, and equipment size are provided. The review process ends with CAPEX, OPEX, and the cost of production of ethylene from using K-COT™ Technology.
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