

CONCEPTUAL DESIGN OF GASIFIER PROCESSING HEAVY OIL FRACTIONS

Podolský, S.¹, Variny, M.¹

¹ *Institute of Chemical and Environmental Engineering, Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava, Radlinského 9, 812 37 Bratislava, Slovak Republic*

Maximization of material and energy efficiency is imperative for the refining and petrochemical industries to succeed on the competitive market. Searching for suitable solutions, refineries often focus on the “bottom of the barrel”, striving to upgrade the heavy oil residues from hydrocracking processes. Such materials are typically sold as low-cost ship fuels or serve for internal heat and power production. One of the possible alternatives it to route such feedstock to a gasifier, where it is broken down into small molecules with the help of a suitable gasifying agent (air, oxygen, steam). Gasifier effluent is then treated in a series of steps, optimized for its energy content recovery as well as for removal of undesired fractions (tars). The produced cleaned syngas is suitable as fuel or can undergo further treatment to recover hydrogen or other valuable components. This study presents the results of a conceptual design of a gasifier processing heavy oil fractions. Advantages of integrating the gasifier within a refinery are pointed out.

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