

عنوان مقاله:

Modification of Ethyl Benzene Production Unit Based on Conceptual Design and Pinch Analysis

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خلاصه مقاله:

Increasing energy cost, reducing the available volume of the conventional fuel and environmental constraints with respect to the emission of the pollutants lead to energy saving as one of the most crucial objectives in the petrochemical plants. Here, both conceptual design (for reducing the fixed cost) and pinch analysis (for reducing the energy cost) of the ethyl benzene production unit are run. An attempt is made to propose a process for ethyl benzene production with only one alkylation reactor instead of two (available in the conventional process). Comparison between the proposed process (integrated reactors) and the conventional process (with two alkylation reactors), reveals an 18 GJ/h decrease in energy consumption and about 15% in equipment cost. Pinch analysis is run for both the processes and it is found that the energy consumption by this proposed process and the conventional process are reduced from 237.5 GJ/h to 143.87 GJ/h and 255.5 GJ/h to 190.9 GJ/h, respectively. The results indicate that energy consumption in this proposed process is lower than the conventional process before and after pinch analysis.

کلمات کلیدی:

Ethyl benzene, Pinch Analysis, Energy minimization, Simulation, Conceptual Design

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