

عنوان مقاله:

Exergy Analysis on an Edible Oil Production Plant Steam Network

محل انتشار:

چهاردهمین کنگره ملی مهندسی شیمی ایران (سال: 1391)

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خلاصه مقاله:

This paper is mainly involved with performing an exergy analysis on the steam generation/consumption network in an edible oil production process in order to optimize thermodynamic losses in the plant. In this work, the major aim of exergy analysis was to determine thermodynamic losses and bottlenecks. Exergy analysis as an able engineering tool helps to evaluate the efficiency of a system considering both the first and the second laws of thermodynamics, thus the thermodynamic losses due to the entropy generations in the system have been included in exergy analysis which often have a significant value. The results show that the main sources of exergy destruction consist of steam reboiler effluents (with an exergy efficiency of 43.15%), steam jackets and coils around the vessels (22.2%), steam spargers in the deodorizing tower (22.7%) and also the ejectors (29.1%). Process simulation represents that applying appropriate thermal integration strategies and some process modifications could be enhanced significantly the exergy efficiency of the system up to 89.08%.

کلمات کلیدی:

Exergy Analysis, Thermodynamic Loss, Optimization, Thermal Integration, Exergy Efficiency, Steam Network

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