

عنوان مقاله:

Area Targeting of HEN for Shiraz Refinery Atmospheric Distillation Unit with Variable Physical Properties of Crude Oil Consideration

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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نویسندگان:

M. M Ghannadi - *Khajeh Nasir Technical University, Tehran, Iran*

M . R Omidkhah - *Department of Chemical Engineering, Tarbiat Modares University, P.O. Box 1۴۱۱۵-۱۴۳, Tehran, Iran*

M . R Hojjati - *Department of Chemical Engineering, Islamic Azad University, Shiraz Branch, Shiraz, Iran*

خلاصه مقاله:

In the previous studies of area targeting using pinch technology, the effects of physical properties variation (density, thermal conductivity, heat capacity and viscosity), and the optimal allocation of fluids to tube-side or shell-side and variation of heat transfer coefficient (h) as a function of temperature with fixed pressure drop was considered by Omidkhah and Hojjati. In this work Shiraz distillation unit is used as a real industrial case study by using the above method to obtain more actual results of area targeting by sketching heat exchanger network area versus different " ΔT_{min} ". Composite curves were plotted using C_p as a function of temperature in order to applying physical properties variation at targeting stage. Then, they were divided into small temperature intervals. Corresponding Pressure drop and heat transfer coefficient were calculated in each interval. Each real heat exchanger was divided into some thermally small hypothetical heat exchangers. Required area in each small exchanger was determined using rigorous physical property calculations by using MATLAB and HYSYS software. The summation of small interval area would be total network area which can be used to improve heat integration project of distillation tower in Shiraz refinery. The case study which is introduced in this article has an advantage to enable the designer to predict a more reliable and accurate estimation of area targeting results at detail design stage of distillation unit heat exchanger network.

کلمات کلیدی:

Heat exchanger network, Pinch technology, Targeting, heat integration, Physical properties, Stream allocation

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