عنوان مقاله:

MINLP Synthesis of Heat Exchanger Networks with Variable Physical Properties of Fluids

محل انتشار:

دوازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1387)

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خلاصه مقاله:

Conventional heat exchanger network design methods involve constant physical and thermodynamic properties of process streams. This may lead to some inconsistencies undermining the optimality of the final design. In this paper, a new MINLP model is presented which can generate a near optimal heat exchanger network while including the variation of physical and thermodynamic properties of process streams. Two case studies have been solved to demonstrate the ability of the new proposed approach. They reveal 4.63 % and 9.9 % increase in network total area requirement when variation of physical and thermodynamic properties of process streams is taken into account. Although these area changes are within the accuracy margins (±10)claimed by Linnhoff and Townsend [1] however they may well affect the optimum ΔTmin found by trading off between capital and energy cost. This may in turn alter .the optimum design configuration

کلمات کلیدی:

Area targeting, Heat exchanger network, MINLP model, Process stream, Variable physical and thermodynamic properties