

عنوان مقاله:

Thermodynamic simulation and pinch analysis of KCS11

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نویسندگان:

Ali Behbahani-nia - *Department of Mechanical Engineering, K.N. Toosi university of technology, Mollasadra St., Tehran, Iran*

Rasool Bahrapouri - *Department of Mechanical Engineering, K.N. Toosi university of technology, Mollasadra St., Tehran, Iran*

خلاصه مقاله:

In this study, a reputable Kalina cycle system, KCS 11, is simulated and analysed. Within this efficient cycle, there are three heat exchangers: the first heat exchanger is designated for heat absorption from the heat source, the second heat exchanger is designed for heat release to the cold source, and the third heat exchanger is designed for energy recovery. In order to achieve precise simulation, a variation of heat capacity is considered. A finite difference method is, therefore, implemented in consideration of the amount of heat transfer in each heat exchanger. In this study, combustion exhaust is considered as the heat source, while cooling water circulates in the condenser. The effect of the product of the overall heat transfer coefficient and the heat transfer area on decisive parameters including the net power output and the efficiency is investigated. Moreover, the influences of the studied parameters are examined on two important pinch technology related curves; these are: the composite curve and the grand composite curve. The results indicated that although increasing the heat transfer surface in each of the heat exchangers boosts the power output, in some cases, it reduces the cycle's efficiency.

کلمات کلیدی:

Kalina Cycle, Heat exchanger, Thermodynamic, Pinch Analysis

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