

عنوان مقاله:

Investigation of double effect evaporation model to energy consuming reduction in NaCl production process: industrial case

محل انتشار:

شانزدهمین کنفرانس بین المللی نوآوری و تحقیق در علوم مهندسی (سال: 1402)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

The experimental data of an industrial unit producing sodium chloride salt by recrystallization method with evaporative crystallization equipped with a thermo-compressor (TC) were investigated. The feasibility of replacing the proposed double effect evaporation (DEE) model instead of the current plan was modeled. The findings indicate that maintaining an equal amount of motive steam in both modes results in a ۴۴% increase in production within the DEE model. Furthermore, concurrent with the production increase, there will be a reduction of ۶۰ units in the specific consumption of natural gas fuel per ton of product produced. In the existing unit, due to the presence of a TC in the path of steam entering the heat exchanger, high pressure steam is needed, which in the studied industrial unit is ۱۰ bar; in contrast, within the proposed DEE model, the motive steam pressure is ۲ bar, as a result, approximately ۱.۸% less fuel will be required in the boiler to generate every ton of steam. These results demonstrate the potential for significant efficiency gains and reduced resource utilization by implementing the DEE plan within the sodium chloride salt production process

کلمات کلیدی:

sodium chloride salt, recrystallization, thermo-compressor, double effect evaporation

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