عنوان مقاله:

Experimental Study of Heat Transfer Rate in a Shell and Tube Heat Exchanger with Air Bubble Injection

محل انتشار:

ماهنامه بین المللی مهندسی, دوره 29, شماره 8 (سال: 1395)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Shell and tube heat exchangers are widely being used in many of industrial and power engineeringapplications. Different techniques have been employed in order to enhance the performance of the heatexchanger. Air bubble injection is one method to increase the turbulence of the flowing fluids which inturn enhance the heat transfer performance. Injecting air bubbles is one of the promising techniqueswhich does not require much complex systems. Air can be injected at different points. In this paper,analysis has been carried out for heat transfer performance and exergy analysis with different airinjection points. Four different cases with and without air injection in shell or tube side have beentaken into consideration and the results are compared. Through the study, it has been observed thatinjecting air bubbles throughout the tube enhances the heat transfer rate by 25-40% at different rangeof the Reynolds Number. The effect of air injection at different points also affects the overall heattransfer and the dimensionless exergy loss.

کلمات کلیدی:

Shell and Tube Heat ExchangerHeat Transfer RateOverall Heat Transfer RateDimensionless Exergy Loss