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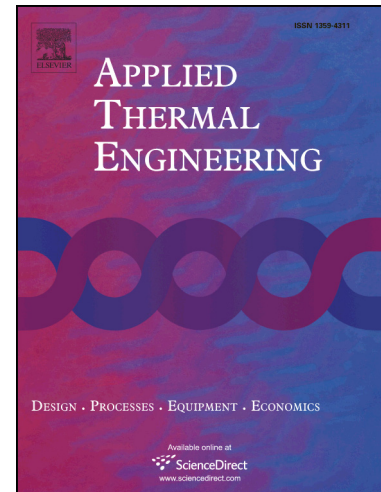
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The effect of using nano-silver dispersed water based nanofluid as a passive method for energy efficiency enhancement in a plate heat exchanger

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Abstract

The purpose of this study is to verify the potential using of nano-silver dispersed water based nanofluid on efficiency improvement of a commercial corrugated plate heat exchanger. In this regards, an experimental rig was provided to recognize the heat transfer rate and pressure drop of Ag-water nanofluid as the working fluid. The two most key thermo-physical properties, i.e. dynamic viscosity and thermal conductivity of nanofluids were experimentally gauged. The findings, which were achieved, displayed that the overall heat transfer coefficient becomes larger, from 6.18% to 16.79%, for 100 ppm silver nanofluid. While using nanofluid, no significant growth in pressure drop values was observed. Moreover, the process temperatures and flow rates have significant impacts on the helpfulness of applying nanofluid in a plate heat exchanger.

Keywords: Silver nanoparticle, Heat transfer enhancement, Nanofluid, Pressure loss, plate heat exchanger

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