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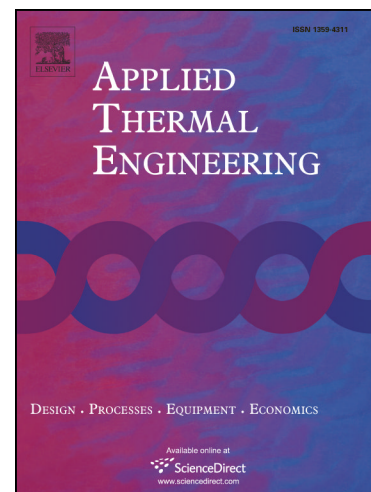
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The features of CLPHP with partial horizontal structure

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Abstract

Considering the requirement of special heat transfer position in practical application, a closed-loop pulsating heat pipe (CLPHP) with partial horizontal structure (horizontal evaporator and condenser configuration) is proposed, and the features of present CLPHP including vertical start-up height and thermal performance, are numerically investigated. The volume of fluid (VOF) model and the continuum surface force (CSF) model are adopted in numerical process. The reliability of present numerical method is verified by comparing the results of vertical CLPHP using present method with those of available literature. The results indicate that the proposed CLPHP can start up and running normally, as long as the height difference between the evaporator and condenser section is more than a threshold which is defined as the critical vertical start-up height. Furthermore, the dimensionless critical vertical start-up height under the conditions of various heating power and filling ration is obtained. When the filling ratio of present CLPHP

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