عنوان مقاله:

Using Taguchi Method for Thermal Analysis of a Thermosyphon Heat Pipe

محل انتشار:

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خلاصه مقاله:

Several Experiments were performed to study the main parameters on thermal analysis of a thermosyphon heat pipe (THP). In this research, the effect of filling ratio and inclination angle on thermal resistance and overall heat transfer coefficient of a THP is analyzed using Taguchi method that performed in Minitab 17 software. The experiments were carried out for filling ratio range of 30%≤F.R≤60% and inclination angle range of 30≤Φ≤90 The Taguchi method is used to formulate the design of experiment, analyse the effect of working parameters and predict the optimal parameters of THP. It is clear that these parameters have a considerable influence on THP performance. The analysis of the Taguchi method shows that the filling ratio is a more important factor than inclination angle and more effective on thermal resistance and overall heat transfer coefficient, but for the efficiency, the effects of both parameters is almost equal. The lowest thermal resistance and the maximum overall heat transfer coefficient obtained in the filling ratio %60 and inclination angle 15º. Also to achieve the highest efficiency, the filling ratio and inclination angle values are %45 and 60º, respectively.

کلمات کلیدی:

Thermosyphon Heat Pipe (THP), Taguchi method, Thermal analysis, Overall heat transfer coefficient

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