Support Vector Regression Analysis of Heat Dissipation in an Oscillating Flow

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**ABSTRACT**

Trials had been performed for heated square workpiece in a rectangular channel to observe heat exchange in pulsating flow. A square work piece consisting of aluminum is utilized amid the examinations. The impact of oscillating frequency and Reynolds number of the stream on heat exchange enhancement and Nusselt number is investigated. The trials are done in the range of 0 to 60 Hz signal frequency. The support vector machine algorithm based on distinct kernels is used to evaluate the work piece temperature. The support vector machine algorithm using PUK kernel presents the best results for work piece temperature. Different diagrams are plotted to demonstrate the impact of RE number and recurrence frequency on the heat exchange enhancement. With an increment in the value of RE number, the increase in heat exchange takes place at all recurrence frequency. Up to some point, heat exchange additionally improved with an increment in recurrence frequency and after that starts decline.

***Keywords****: Square cylinder; aluminium work piece; Nusselt number; Reynolds number; Support vector machine.*