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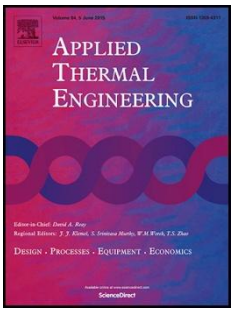

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PII: S1359-4311(16)30097-7
DOI: http://dx.doi.org/doi: 10.1016/j.applthermaleng.2016.01.147
Reference: ATE 7707

To appear in: *Applied Thermal Engineering*

Received date: 15-7-2015
Accepted date: 24-1-2016

Please cite this article as: Unal Akdag, M.Aydin Komur, Selma Akcay, Prediction of heat transfer on a flat plate subjected to a transversely pulsating jet using artificial neural networks, *Applied Thermal Engineering* (2016), http://dx.doi.org/doi: 10.1016/j.applthermaleng.2016.01.147.

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Prediction of heat transfer on a flat plate subjected to a transversely pulsating jet using artificial neural networks

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H I G L I G H T S

- Prediction of the heat transfer from a flat plate subjected to a transversely pulsating jet is performed
- An experimental study is performed to estimate the heat transfer characteristics for comparison
- The back propagation algorithm, the most common learning method for ANNs, is used
- The ANN successfully estimated the heat transfer on a flat plate subjected to a pulsating jet

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ABSTRACT

In this paper, the prediction of the heat transfer from a flat plate having constant heat flux subjected to a transversely pulsating jet is investigated through the use of artificial neural networks (ANNs). An experimental study is carried out to estimate the heat transfer characteristics as a function of selected input parameters. The experimental study consists of a flat copper plate heater is located in a wind tunnel, which includes a pulsating jet actuator injected into the stream at the entrance of the plate. This is a well-known typical film cooling application. An experimentally evaluated data set is prepared to be processed with the use of neural networks. A back propagation algorithm, the most common learning method for ANNs, is used for training and testing the network. The results of the experiments and the ANN predictions are in close agreements with errors less than 1%. This study showed that the

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