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Numerical Investigation of Thermal-Hydraulic Performance of a Flat Tube in Cross-Flow of Air

Authors : Hamidreza Bayat, Arash Mirabdolah Lavasani, Meysam Bolhasani, Sajad Moosavi

Abstract : Heat transfer from flat tube is studied numerically. Reynolds number is defined base on equivalent circular tube which is varied in range of 100 to 300. In these range of Reynolds number flow is considered to be laminar, unsteady, and incompressible. Equations are solved by using finite volume method. Results show that increasing l/D from 1 to 2 has insignificant effect on heat transfer and Nusselt number of flat tube is slightly lower than circular tube. However, thermal-hydraulic performance of flat tube is up to 2.7 times greater than circular tube.

Keywords : laminar flow, flat tube, convective heat transfer, heat exchanger
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