

Abstract

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Numerical Simulation for Confined Rectangular Slot Jets Impingement on Isothermal Horizontal plate

The aim of this study was to investigate steady heat transfer due to multiple impinging vertical slot jets onto an isothermal surface for laminar flow regime with same mass flow rate, i.e. the effect of increasing the number of jets on the plat with same total mass flow rate. The numbers of jets are varied from one jet to five jets. The transport equations for continuity, momentum, and energy are solved numerically by finite volume technique. The numerical results are reported for the effect of Reynolds number, the number of jets, as well as jet spacing on the local Nusselt number, skin friction factor and the average Nusselt number. The study was performed for air ($Pr=0.71$) and water ($Pr=6$) as different two fluids. The Reynolds number was changed from 20 to 200 in laminar flow manner while the jet-bottom wall spacing to jet width was changed from 2 to 6. Comparison with previous published results shows a good agreement.