

Heat Transfer and Turbulent Fluid Flow over Vertical Double Forward-Facing Step

Authors : Tuqa Abdulrazzaq, Hussein Togun, M. K. A. Ariffin, S. N. Kazi, A. Badarudin, N. M. Adam, S. Masuri

Abstract : Numerical study of heat transfer and fluid flow over vertical double forward facing step were presented. The k-w model with finite volume method was employed to solve continuity, momentum, and energy equations. Different step heights were adopted for range of Reynolds number varied from 10000 to 40000, and range of temperature varied from 310K to 340 K. The straight side of duct is insulated while the side of double forward facing step is heated. The result shows augmentation of heat transfer due to the recirculation region created after and before steps. Effect of step length and Reynolds number observed on increase of local Nusselt number particularly at recirculation regions. Contour of streamline velocity is plotted to show recirculation regions after and before steps. Numerical simulation in this paper done by used ANSYS Fluent 14.

Keywords : turbulent flow, double forward, heat transfer, separation flow

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