

External inconsistent flow assisted Confined Convective Heat Transfer

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Forced convection covers wide range of practical, functional, industrial, engineering and scientific applications. Convective heat transfer behaviour in presence of forced flow is broadly studied and understood under uniform flow conditions However, a large domain of applications sustains to the convection heat transfer under varying flow conditions. Inconsistent flow results in nonlinear heat transfer, therefore it is imperative to understand response of flow in coupling of external inconsistent forced flow with confined convective heat transfer. Systematic experimentation was carried out on forced convection heat transfer apparatus under varying non-linear flow conditions. Plate orientations, types of enclosures(solid, meshed, perforated), flow velocity variations etc. are taken as governing parameters to effect convective heat transfer phenomenon which is perceived as deviations in value of heat transfer coefficient. R-V zonal system is utilized to simplify the fundamental understanding of heat transfer coefficient variation with surface orientation under varying flow field. Results indicate that enclosures significantly affect heat transportation from the source under varying conditions. The compiled results are noted to provide excellent physical insight in the phenomena of heat transfer. The proposed work is intended to explore science behind change in convective heat transfer to explain significant effects on its wide range applications.

Biography

Ribhu Bhatia is a 21 years old final year undergraduate student pursuing B-tech in Aerospace Engineering from SRM Institute of Science and Technology. He has done internships with a handful of aerospace industries, has attended reputed international conferences and has published research papers in highly indexed journals as well. He is also well versed with multiple simulation and CFD softwares.

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