

Abstract

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Effects of Swirl Intensity on Heat Transfer & Entropy Generation in Turbulent Decaying Swirl Flow

Highlights • Accurate numerical model of anisothermal turbulent swirl flow was built & validated. • The swirl number is directly and inversely proportional to Nusselt & Stanton numbers, respectively. • Numerical simulations revealed that a critical swirl number exists ($Sn \approx 0.278$). • A novel correlation for predicting entropy augmentation number in swirl flow is proposed. • The entropy field in the flow core was found to be dominated by viscous irreversibilities.