

Simulation of turbulent flow of nanofluid due to existence of new effective turbulator involving entropy generation

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Highlights

- Swirl flow generator has been inserted inside a pipe.
- Turbulent flow of nanofluid as well as entropy generation was examined.
- Increasing inlet velocity raises the convective mode.
- Augmenting width of turbulator leads to greater $S_{gen,f}$.

Abstract

In current work, turbulent flow of H₂O based nanomaterial flow containing copper oxide inside a pipe fitted with new swirl flow generator was examined. Outputs were examined to find the impact of width tape for the Reynolds number in turbulent regime. In addition, correlations were derived for predicting component of irreversibility. Outcome show that viscous loss has direct relationship with pumping power. Thus, increasing inlet velocity makes the differential pressure to augment. Owing to higher velocity gradient, $S_{gen,f}$ augments with increasing width. Using turbulator with greater b leads to generate stronger turbulence intensity.