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Investigation of second law and hydrothermal behavior of nanofluid through a tube using passive methods

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Abstract

In current research, CuO- H₂O nanofluid turbulent flow and second law analysis are investigated in a circular channel equipped with new helical swirl flow device. In order to find the impacts of Reynolds number (Re), height (BR) and pitch (PR) ratios, finite volume method has been used. Good formulas for exergy loss and Bejan number were extracted. Outputs portray that reduction of exergy detracts with enhances of BR but it augments with enhance of PR. Role of height ratio is less effective than other parameters.

Keywords: Heat transfer; Second law analysis; Water based nanofluid; Turbulent flow; Exergy analysis.

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