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EFFECTIVENESS OF HEAT TRANSFER INTENSIFIERS IN A FLUID CHANNEL

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Abstract

Numerical investigations of fluid flow, heat transfer and pressure drop in an annular channel to enhance the heat transfer on different curved heating profiles are presented. In the present paper sequentially coupled approach is implemented to analyse the effectiveness of heat transfer intensifiers with different geometries of protrusions by using commercially available CFD software.

A channel with heat intensifier models are designed and analysed for various geometries. With the implementation of intensifiers it is found that there is a significant amount of improvement in heat transfer efficiency. Pressure drop and Turbulent Kinetic Energy for the various heating channel surface model are studied. An experimental analysis is carried out to validate the numerically achieved results.

The numerically calculated coefficients of heat transfer and pressure drops with respect to different geometrical protrusions found in the present study conforms to the observations of real life Heat transfer intensifiers of Fluid channel.

Author Keywords

Intensifiers, Annular channels, CFD, Heat Transfer, Pressure drop

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