# Heat Transfer Enhancement in a Double Pipe Heat Exchanger Using Different Fin Geometries in Turbulent Flow

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## Abstract

Heat transfer enhancement is widely used for improving heat exchanger performance in industrial processes. This is accomplished by increasing the surface area of the heat exchange surface by using fins or inserts of different geometries. The present work is an experimental study of heat transfer when using different fins geometries for the heat exchange surface in a double pipe heat exchanger. The fin geometries included interrupted rectangular fins, circular fins and helical ribs. The heat transfer coefficient and pressure drop were experimentally determined for a range of Reynolds numbers of hot and cold fluids. The results showed that extending the surface using different fin geometries enhanced the heat transfer coefficient, but was dependent on the Reynolds number of both fluids. The maximum heat transfer enhancement was obtained for a rectangular fin and the minimum was for a circular fn. In the case of the finned tubes, the lowest pressure drop was observed for the circular fin and highest for the rectangular fin