

## **ENHANCEMENT OF HEAT TRANSFER IN TUBE-IN-TUBE HEAT EXCHANGERS WITH COPPER TWISTED INSERTS**

Heat exchangers have several industrial and engineering applications. There are different methods to enhance heat transfer in heat exchangers. Passive technique of heat transfer is the most economical and best suited one. The role of inserts in internal forced convection has been widely acknowledged as a passive device in the heat transfer enhancement. One of such technique is introduction of twisted inserts which enhances the heat transfer coefficient. Twisted copper inserts when placed in the path of the fluid flow, creates a high degree of turbulence resulting in an increase in the heat transfer rate. By placing inserts, it is expected that the benefits due to the increased heat transfer coefficient overcome the higher cost involved because of the increased frictional losses. The work mainly focuses on increasing the heat transfer of tube-in-tube heat exchangers by using twisted copper inserts. The results obtained from the tube with twisted copper insert are compared with those without twisted insert using standard properties of heat transfer (LMTD & Effectiveness). The relations based on the data gathered during this work for predicting the heat transfer coefficient of the horizontal pipe with twisted taped insert are proposed. According to the results, in order to obtain maximum heat transfer, the twist ratio must be at the lowest level.

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