

(54) Title of the invention : LIGHT WEIGHT AND LOW COST TUBE CROSS SECTION FOR IMPROVED THERMAL PERFORMANCE OF TWO-PHASE HEAT EXCHANGER.

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(57) Abstract :

The present invention relates to provide a selective tube cross section configured for improved heat transfer performance of two-phase heat exchanger. More particularly, the present invention is directed to developing a tube configuration of elliptical cross section at outside and circular cross section at inside for two phase shell and tube heat exchanger with a view to enhance the boiling heat transfer performance. The developed newly designed tubes are found to show better boiling heat transfer coefficient in both angle of attack (0° and 90°) and different aspect ratios (1.47, 1.31 and 1.17)as compared to circular tube. The pool boiling heat transfer performance of porous metal coated tubes shows significant enhancement heat transfer coefficient of approx. 49% and 26% as compared to circular tube and newly designed plain tube. Therefore, two phase shell and tube heat exchanger with invented the tube profile will benefit manufacturer and user industries including thermal power plant, nuclear power plant, and other allied industries.

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