

Abstract Details

Title: Heat transfer improvement using vortex generator

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Abstract: Heat transfer performance of fin-tube heat exchanger can be augmented by the use of longitudinal vortex generators which generates longitudinal vortices. In the present work experimentations have been performed to investigate the heat transfer and flow resistance characteristics of rectangular winglet pair (rwp) type vortex generators (vgs) mounted on fin surface in a fin-tube heat exchanger. Rwp have been placed in common flow down (cfd) configuration in downstream location. Heat transfer and flow resistance characteristics have been compared with the baseline case using colburn's factor(j), friction factor(f) and performance evaluation criterion (pec) also known as area goodness factor = j / f . Investigations have been performed considering the reynolds number in the range of 1000 to 10000 and angle of attack as 35° . The vortex generator considerably improves the thermos hydraulic performance and decreases the flow resistance due to a reduction in the face area. The result clearly indicates that the rectangular winglet pair gives the better thermos hydraulic performance.

Keywords: rectangular winglet, vortex generator, fin-tube heat exchanger