Effect of Integral Finned Tube on Heat Transfer Characteristics for Cross Flow Heat Exchanger

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA
Volume 139 - Number 3
Year of Publication: 2016

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10.5120/ijca2016909121

Abstract

The enhancement of heat transfer characteristics for cross flow heat exchanger with using low integral finned tube has been experimentally studied in this paper. The study includes designing and manufacturing of two test sections. Each one has a single copper tube multi passes (eight passes). The first test section has the smooth copper tube with (19 mm) inner diameter and (24 mm) outer diameter. The second one has low integral finned tube with (19 mm) inner diameter, (21 mm) root diameter and (24 mm) outer diameter. The fin height is (1.5 mm), thickness (1 mm) and the pitch is (2 mm). Air were used as a cooling fluid passing across the test tube with a range of velocity (1, 2, and 4) m/s. Water were flows inside the tube with a range of (2, 3, 4, 5 and 6) L/min. The water temperatures at the inlet of test tube were (50, 60, 70, 80) °C. The study concluded that the heat transfer coefficient for cross flow heat exchanger is increasing when using low integral finned tube over the use of smooth tube.

References

Index Terms

Computer Science Applied Sciences

Keywords

Integral fin, Heat transfer coefficient, Enhancement, Turbulent flow, Cross flow.