

ABSTRACT

Heat exchanger is a device that is used as a medium for heat transfer between two or more fluids that has a different temperature. The heat exchanger has a different type and design structure, one of which is the fin plate heat exchanger equipped with a fan. In this study an evaluation of the performance of the plate fin heat exchanger was carried out on several variations of the arrangement. The performance of the heat exchanger can be seen from the total heat transfer coefficient (U) and the effectiveness of heat transfer (ϵ). Experiments were carried out with variations in the heat exchanger arrangement namely single, two heat exchangers arranged in series and two heat exchangers arranged in parallel. The hot fluid input flow rate is the same for each variation, which is 1 kg/m^3 . Data retrieval was carried out with a temperature range of $50\text{-}80^\circ\text{C}$ at an increase of $\pm 5^\circ\text{C}$ with data recorded by the datalogger namely hot fluid temperature, cold fluid temperature and environment temperature. Data processing is done to get U value and effectiveness value. Based on the experimental results, the average heat transfer coefficient is $72,5916\%$ higher than the single heat exchanger than the single heat exchanger and parallel heat exchanger $68,0385\%$ higher than the single heat exchanger. While the effectiveness of heat transfer in the heat exchanger series is $38,7494\%$ higher than the single heat exchanger and the parallel heat exchanger is $14,0521\%$ higher than the single heat exchanger.

Keywords: *effectiveness, heat exchanger, heat transfer coefficient, plate fin.*