ABSTRACT

Heat exchanger is a device where two fluid flows with different temperatures move to exchange heat. Heat exchangers have different types and designs, one of which is a spiral tube in shell heat exchanger. Generally in spiral tube in shell heat exchanger there are two types of flow, namely parallel and counter flow. This study was conducted to evaluate the performance of spiral tube in shell heat exchangers in two different flow directions. By using the same type of fluid, namely water and the same mass flow rate on both sides, which is equal to 0.017 kg / s, the performance of heat exchanger can be evaluated through U value and effectiveness value (ε). Data retrieval range is from the hot fluid inlet temperature of 50 - 80 ^oC, data collection is done by recording all temperature information on the thermocouple display when the hot fluid inlet temperature shows an increase of ± 5 ^oC from the minimum range. Based on experiments carried out the U value in the direction of parallel flow produces a value of 0.5462 kW/m^2.K while the counter flow produces a value of 1.4200 % higher that is 0.5604 kW/m^2.K. For parallel flow direction, it produces effectiveness of 36.9815% while the counter flow direction results in effectiveness 5.0415% higher, that is 42.0229%.

Key word : *effectiveness, heat transfer coefficient, parallel flow, counter flow*