

Effect of Position of fins to Heat Transfer of a Closed-Loop Oscillating Heat Pipe with Check Valves

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Abstract. This research aimed to determine the effect of position of fins to closed-loop oscillating heat pipe with check valves (CLOHP/CV) at top heat mode. To check on heat transfer rate needed to focus on evaporator temperature, air velocity, and position of fin. All heat exchangers used ethanol as working fluid with the filling ratio of 50% by total volume of tube, evaporator temperature at 60, 70, and 80 degrees Celsius, and air velocity at 0.5, 1.0, and 1.5 meter per second, size of fin was 0.5 centimeter. All heat exchangers used different positions at evaporator and condenser and 2 parts. The CLOHP/CV was made from copper capillary tube of (inner diameter: 5 mm), 24 turns 2 check valves. The length of evaporator and condenser and adiabatic is 20, 20, and 10 centimeter respectively. From the experiment it's was found that the heat exchanger of both finned tubes had a temperature of 80 degrees Celsius and a wind speed of 1.5 m / s with heat transfer rate and thermal effectiveness the highest.

Keyword: CLOHP/CV, Fins, Heat transfer, Thermal effectiveness, Heat Mode

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